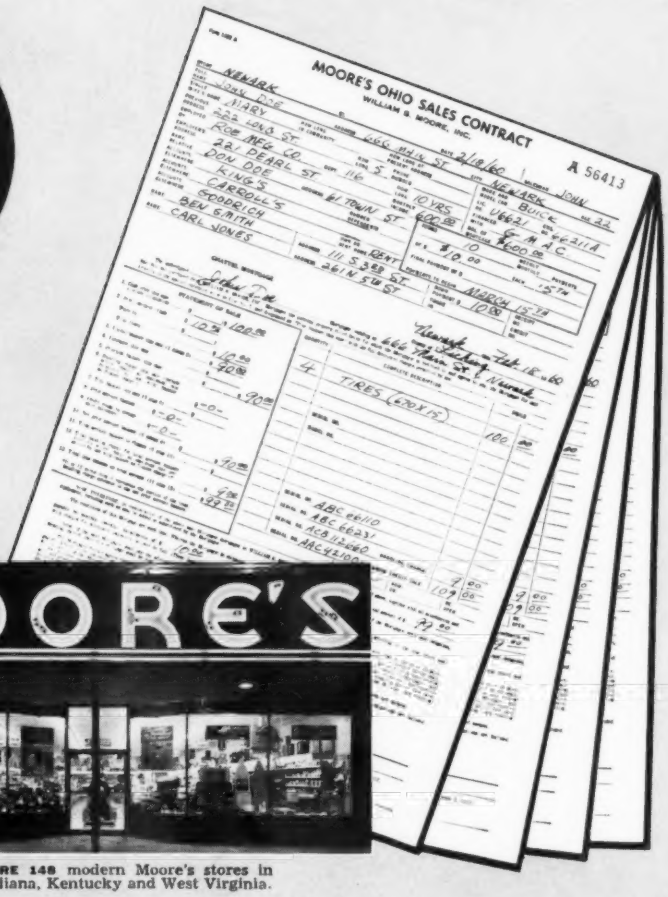
Office Management and AMERICAN BUSINESS

The Magazine of Administration and Systems · July 1960

"Input" improvements seen as major 1960 automation advance
Personnel: salaries go higher, experienced people are harder to get
Systems analysis—let's take the simple, workable approach

NCR
no carbon required
Paper

WILLIAM S. MOORE
President of
Moore's Stores



THERE ARE 148 modern Moore's stores in Ohio, Indiana, Kentucky and West Virginia.

"NCR Paper saves its entire yearly cost every six months."

MOORE'S STORES, NEWARK, OHIO

"NCR Paper enables us to use a Time Payment Sales Contract that helps speed up and increase our credit sales. Previously, we used 'old-fashioned' carbon paper methods that required us to insert and remove carbons every time we wrote credit transactions.

"NCR Paper forms make it possible for our sales people to pick up originals and copies as a complete unit. Copies are always clear and easy to read. All this saves valuable time and encourages our people to make and write more credit sales. We are delighted with the job NCR Paper is doing for us.

"We estimate the time savings and other advantages of NCR Paper save us its entire yearly cost every six months, thus returning 200% annually on our investment."

William S. Moore
President, William S. Moore, Inc.

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***THE NATIONAL CASH REGISTER COMPANY,* Dayton 9, Ohio**

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NCR PAPER ELIMINATES CARBON PAPER

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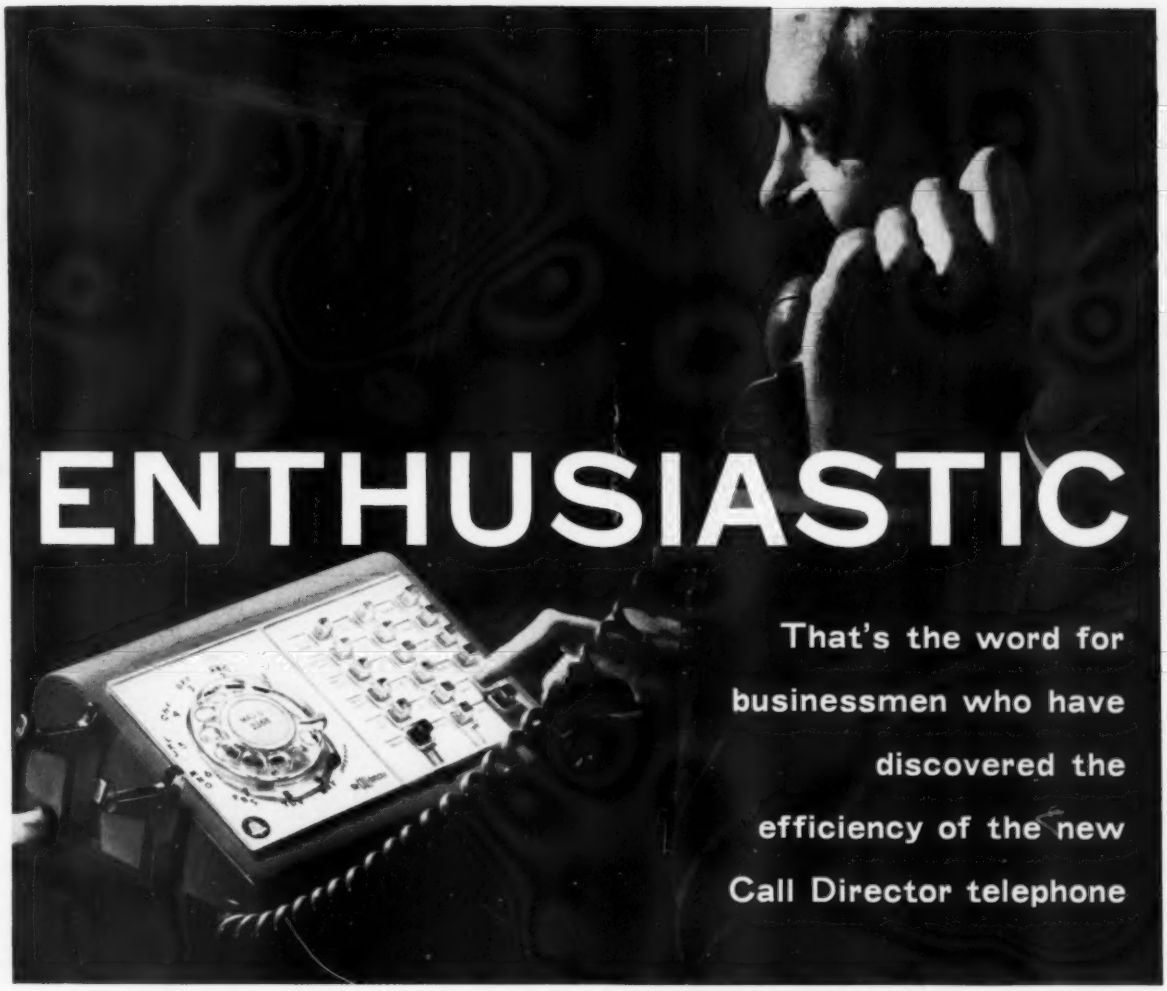


Available in 18-button and 30-button models—in gray, green or beige.

Henry J. Blackford, Jr., Branch Mgr., Alex Brown and Sons, Investment Securities, Spartanburg, South Carolina:

"For years, we have been waiting for telephone equipment like the Call Director. We have it now—and I can tell you it's doing a fine job for us. Our salesmen can take calls on any of our eleven lines and handle a lot *more* calls. We're really enthusiastic about the new service, and so are our customers."

Ray K. Deems, President, Friedman-Deems and Associates, Columbus, Ohio:

"We do 90% of our real estate business by telephone, and our new Call Director phones and intercom system have really streamlined our operations. We now handle more accounts than ever, and do it faster—without adding new people or office space. We figure the new system saves us $225-plus per month."

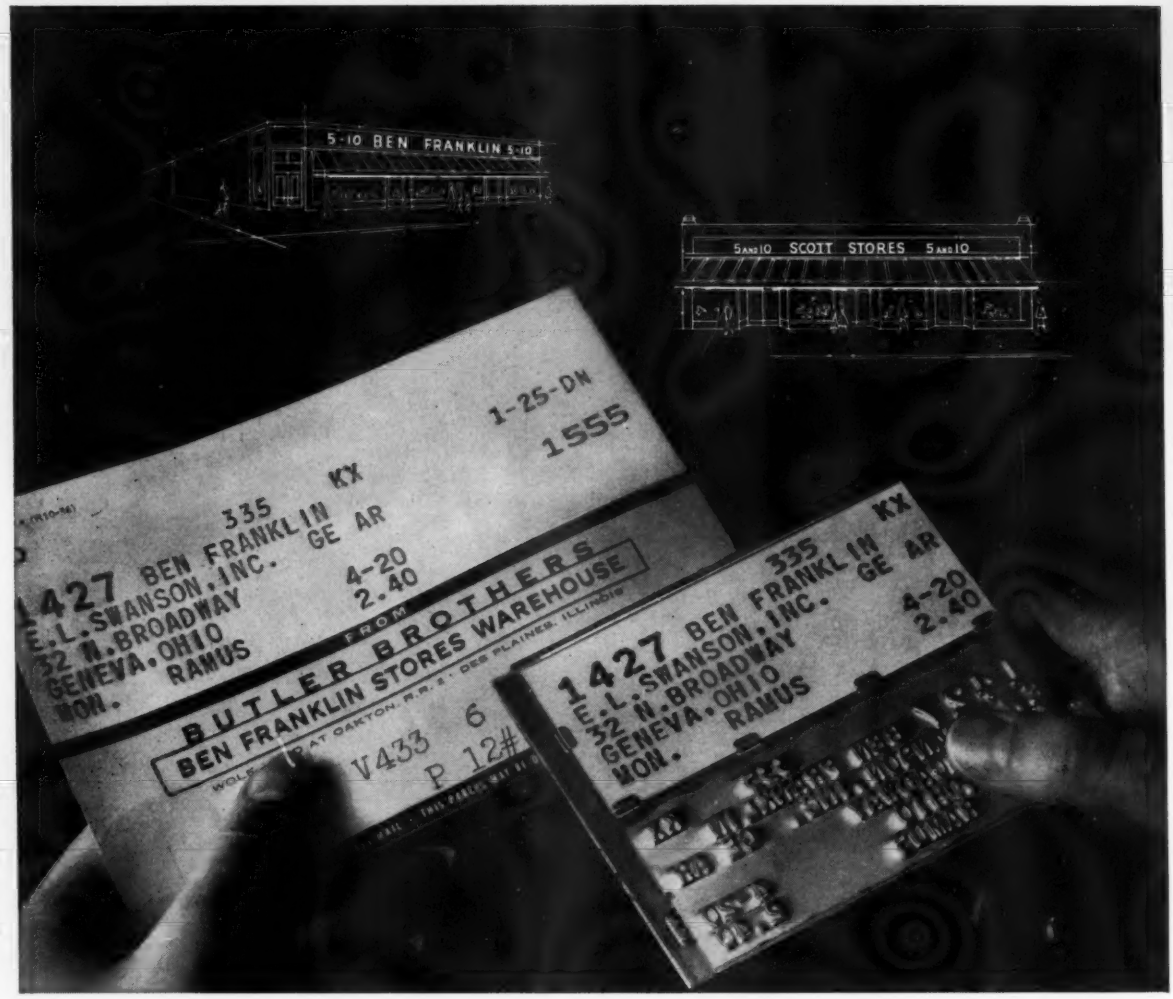
R. L. Getten, Midway Loan Company, St. Paul, Minnesota:

"We were outgrowing our key-box facilities, but still weren't big enough for a switchboard. Your proposal of Call Director telephones with intercom really solved our problem. Now we're giving customers the service they deserve—and can expand as needed by simply using the Call Director's extra pushbuttons. Congratulations on the Call Director. It's terrific!"

The Call Director telephone with Bell System intercom could give *your* business a boost, too. Why not call your Bell Telephone business office for details? A representative will visit you at your convenience. No obligation, of course.

BELL TELEPHONE SYSTEM

Another example of Addressograph-Multigraph cost-cutting



How Butler Brothers creates good "customer impressions"

Butler Brothers, large Chicago wholesale firm, is the sole supplier of merchandise to Ben Franklin and Scott Variety Stores throughout the country. Orders pour in daily to Butler warehouses for widely varied quantities and assortments.

For each order, identical information must be written on a multiplicity of forms . . . shipping labels, bills of lading, statement lists and other records. Each "customer impression" must be accurate and highly legible, to avoid errors in shipping and billing.

Butler Brothers has found Addressograph Methods ideal for this repetitive writing job. All documents for each order are speedily and accurately imprinted from Addressograph plates in one low-cost operation. Routing and credit "look-ups" are greatly reduced. And, most importantly, customers are favorably impressed by the speed and accuracy of the system.

This is just one of many ways Addressograph Methods save time, cut costs and insure accuracy in business operations. Ask your nearby Addressograph office to demonstrate how they can do the same for your business, large or small. Or write Addressograph-Multigraph Corporation, Cleveland 17, Ohio.

E. L. Swanson, owner of the Ben Franklin Store in Geneva, Ohio, has been dealing with Butler Bros. for over 21 years. He states: "I've always been pleased with the accuracy of their shipping and billing—never found any reason to complain." It's a typical customer impression created by Butler Brothers' efficient system.

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Addressograph-Multigraph

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SERVING SMALL BUSINESS • BIG BUSINESS • EVERY BUSINESS

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Office Management
and AMERICAN BUSINESS

Office Management established 1940; *American Business* established 1930. This publication incorporates *System* magazine, founded in 1900, and *Business Equipment Topics*, founded in 1905.

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PUBLISHER
Donald McAllister

EDITOR
Robert M. Smith

ASSOCIATE EDITORS
John A. Rhea
John M. Sine
Edith Conner
Lyman Coddington

RESEARCH ASSOCIATE
Mary D. Lyons

EDITORIAL ASSISTANT
Frances Fascetta

ADVERTISING DIRECTOR
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ADVERTISING and BUSINESS MANAGER
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Magnetic ink character sensing is a major weapon in automation's battle against the input bottleneck (see page 15). Shown above is one such device, a check sorter installed by Pitney-Bowes and National Cash Register at Chemical Bank New York Trust Company.

HF 5500
A203
V21

July, 1960
Volume XXI, Number 7

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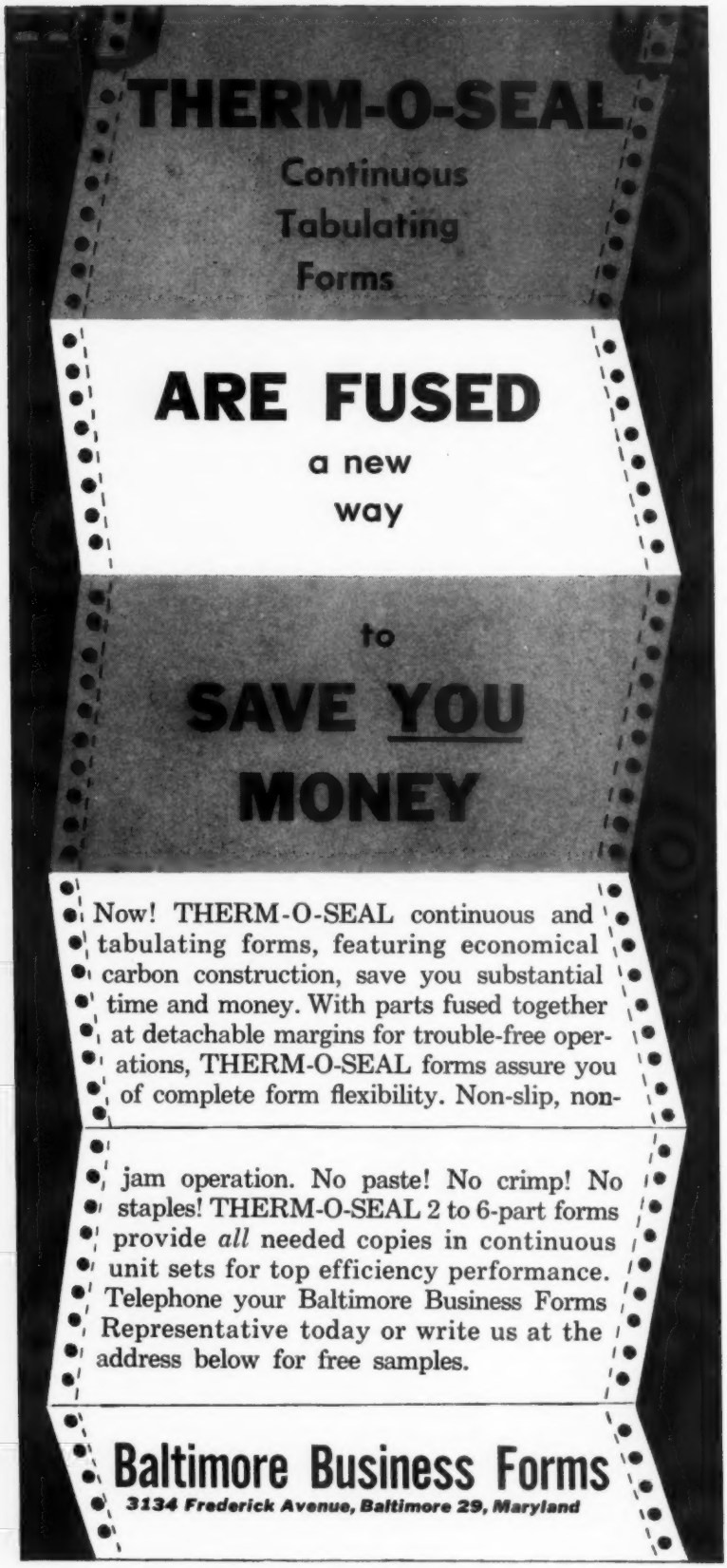
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Coming Events

AMA Sixth Annual Summer Program for Executives. Hamilton, N. Y., July 6-Aug. 31.
Sponsor: American Management Association.
Place: Colgate University.

AMA Simulation Model on Physical Distribution. Saranac Lake, N. Y., July 6-8.
Sponsor: American Management Association.

Symposium on Computers and Data Processing. Estes Park, Colo., July 28-29.
Sponsor: University of Denver.
Place: Stanley Hotel.

AMA Seminars on Data Processing Functions, and Information and Reporting Systems. Hamilton, N. Y., Aug. 15-19.
Sponsor: American Management Association.
Place: Colgate University.

National ACM Conference. Milwaukee, Wis., Aug. 23-25.
Sponsor: Association of Computing Manufacturers.
Place: Marquette University.

Sixth Annual NAFM Supply, Equipment, and Fabric Fair. Chicago, Aug. 27-30.
Sponsor: National Association of Furniture Manufacturers.
Place: Conrad Hilton Hotel.

AMA Seminar on Data Processing Evaluation. Hamilton, N. Y., Aug. 29-31.
Sponsor: American Management Association.
Place: Colgate University.

Twentieth Joint Annual Meeting of ASWA and AWSCPA. Philadelphia, Sept. 22-24.
Sponsors: American Society of Women Accountants and American Woman's Society of Certified Public Accountants.
Place: Hotel Warwick.

National Business Forms Conference. St. Louis, Sept. 14-17.
Sponsor: National Business Forms Associates.
Place: Chase Park Plaza Hotel.

Execurama Business Exposition. Los Angeles, Sept. 27-29.
Sponsor: The Stromme Co.
Place: Hollywood Palladium.

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Every mailing meant a mob scene!

"We have a special mailing of checks four times a year. Sales puts on a mail promotion in Spring and Fall. To get out the six mailings, we had to draft a lot of our own girls, and bring in teen-agers after school. We had six weeks of bedlam every year, and a mad scramble to get back on our regular work schedules after every mailing.

"Then we got smart and brought in the little Pitney-Bowes folder and inserter. Now one girl handles all six mailings. Peace, it's wonderful!"

The Model 3300-FH is a small combined folding-inserting machine —that folds and stuffs into envelopes 500 single sheet enclosures within eight minutes.

The 3300-FH handles cards, price lists, invoices, booklets, bulletins, even stapled sheets. It is easy to set and operate, adds greater work capacity; helps avoid interruptions, the diversion of office girls from their regular jobs, overtime, and hiring temporary workers. The inserter unit can be used separately with any PB folding machine.

Ask any Pitney-Bowes office for details, or send for free illustrated booklet and case histories.

FREE: *Handy desk or wall chart of postal rates, including recently increased parcel post rates.*

The 3100 Inserter is a larger, high capacity model, that will stuff up to six enclosures, at speeds as high as 6,000 per hour. It can also be attached to a Pitney-Bowes postage meter mailing machine that meter stamps and seals envelopes after stuffing.

PB

Pitney-Bowes
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Made by the originator of the postage meter . . . 139 offices in the U. S. and Canada, with nationwide service coast to coast.

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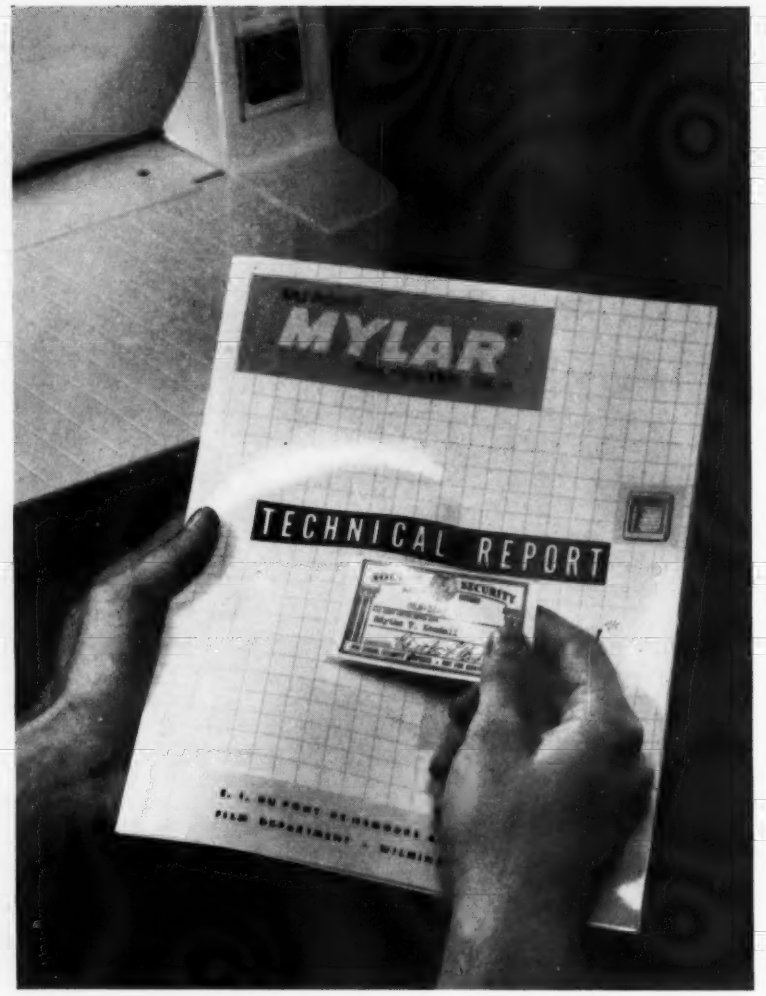
2968 Crosby St., Stamford, Conn.

Send free ☐ illustrated booklet and "case studies" on PB Folding and Inserting Machines; ☐ Postal Rate Chart.

*Name*_____

*Address*_____



Mylar® adds new sparkle to sales aids ...longer life to valuable papers

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Paperwork can sink ship, Goldstein warns conference

Paperwork can sink a battleship, Leon Goldstein, systems engineer of American Business Systems, warned the first Rutgers University Conference on Business Systems and Data Processing, held recently in New Brunswick, N. J.

The conference brought together 54 systems, procedures, and data processing managers to consider methods to attack the mounting business paperwork.

Goldstein focused attention on the extent of this paperwork growth by pointing out that if all the paper involved in the construction of a battleship were heaped on its deck, the ship would sink.

Accordingly, he suggested two approaches to this paper problem. One is better control of forms used; the second is the use of techniques which combine all the desired information to solve a problem.

Goldstein reported that through the use of multi-form sets, as many as 16 forms can be prepared in one operation, and nine on tabulating equipment.

"The research work which precedes the development of these time saving forms accounts for 85 per cent of their success," he pointed out.

"Imagineering" encouraged

"Use imagination, creative thinking, and 'imagineering' to develop the kind of form that will take all the ingredients and parlay them in combination," he said.

Horace Rush, office and management administrator of the New Jersay Office Supply Company, added that the key to successful changeover to procedure planning lies in "selling" the idea rather than "telling" the idea to systems personnel.

He suggested that procedures planners begin by observing the clerical evolutions in all areas of the concern and then devise a system to meet these needs. "Just because a system has worked for some one company does not guarantee that it will succeed for yours," he warned.

To start a program, Rush said, the planner must understand the broad goals of the system, be ready to guide the thinking of those involved, and integrate their contributions with the overall plan.

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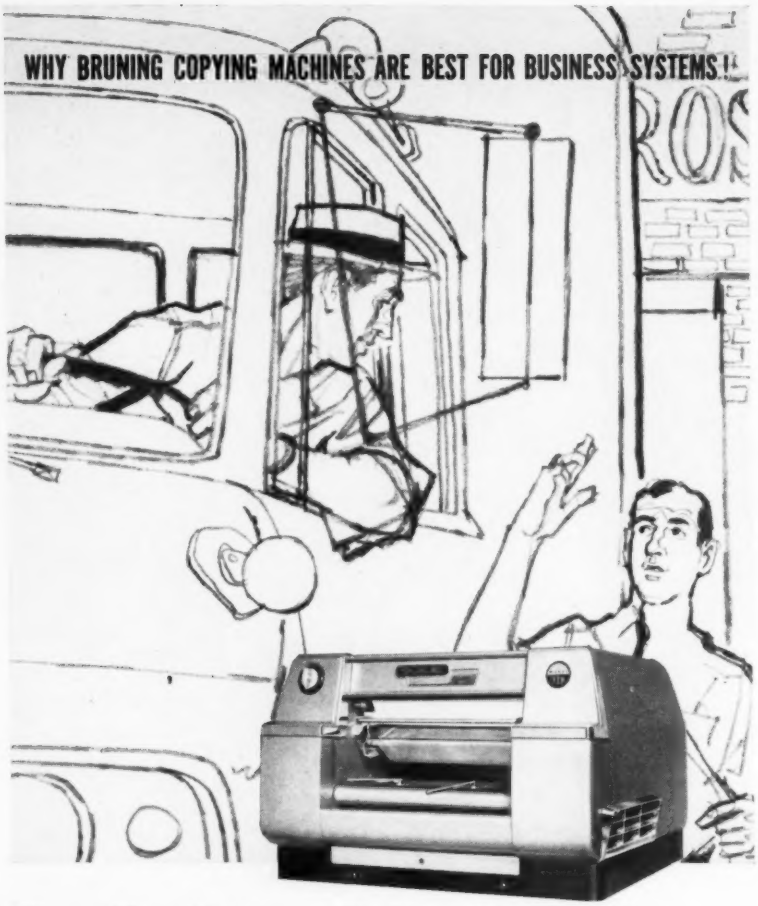

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One writing does it for *any type* order-billing operation when you use flexible Bruning Copyflex copying machines. You eliminate clerical rewriting and retyping, get shipments and invoices to customers, days earlier!

Key to Copyflex flexibility is the original translucent order form. This can be a preprinted single sheet or a part of a snap-out or continuous form. On this original order form, data can be added or changed as necessary and copies made at any point to serve as shipping copies, stock-picking copies, factory orders, and finally invoices. For multiple shipments, reproducible copies can be made of the original to serve as "originals" for reproduction of as many sets of shipping, production, and invoice copies as necessary.

Ideal for business operations, Copyflex gives you sharp, black-on-white copies (or color coded) . . . at only a penny each for materials for letter size! Why wait when you can put an end to costly writing and waiting in your company by mailing coupon now.

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Please send me information on Copyflex for Order-Billing.

Name_____ Title_____

Company_____

Address_____

City_____ County_____ State_____

Leasing may help business modernize its office work

Electric typewriters, accounting machines, copying equipment, special filing systems, and electronic computers have multiplied the cost of equipping even a modest-sized office to the point where almost any expansion, modernization, or change involves major capital outlay.

This is the view of G. F. Walters, chairman of Acme Associates, Inc., Chicago leasing company, who points out that a growing number of companies solve this problem by leasing, rather than owning, their office equipment.

Walters agrees with many office management experts that there is hardly a business that could not benefit immediately by installation of electronic systems for providing management with more and better information, data storage and processing machines, instant-access files, automated accounting systems, and other improvements to save time and labor.

Such new systems usually result in substantial savings in personnel costs as well as greater management efficiency, yet business managers are understandably reluctant to tie up lines of credit or deplete working capital. For them, leasing may hold the solution.

Plans are flexible

"Management must realize," Walters comments, "that even the most modern office equipment does not make profits simply because you own it; your profits result from the use of equipment. Leasing offers all of the profit-making potential of utilization without the drawbacks of ownership."

Leasing plans can be drawn up to cover as little as one typewriter or duplicator, or as much as an entire office full of the latest automated machines, plus the desks, filing cabinets, movable partitions, and even wastebaskets that go with the machines. Lease agreements are often "open-ended" to permit addition of other items as they are needed.

Walters emphasizes that leasing is not a substitute for adequate working capital or ability to borrow, but rather a financial tool that enables the executive to make the best possible use of his assets.

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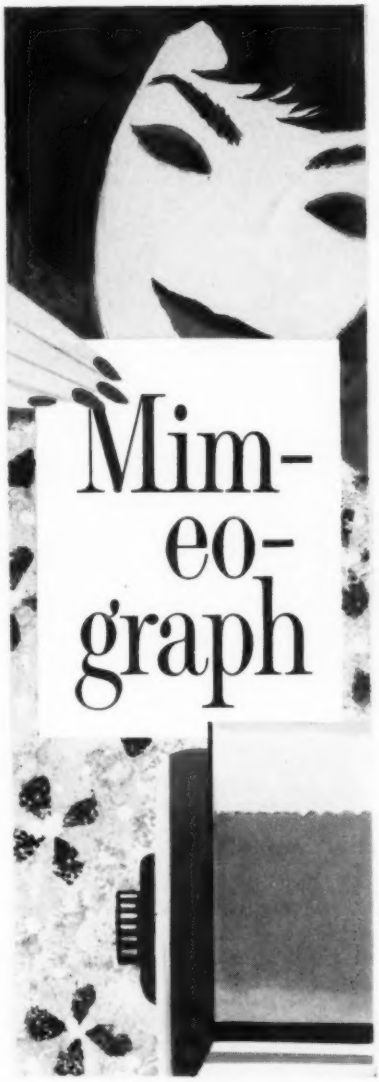

Use stencil duplicating papers? Hammermill Mimeo-Bond and Graphicopy Papers give you 212 hard-working, lint-free varieties. The order number for each Graphicopy item is listed on Hammermill's new, 11¾ x 27⅜ wall chart – the Graphicopy Paper Selection Guide. Get one from your Hammermill supplier or write Hammermill Paper Company, 1471 East Lake Road, Erie 6, Pennsylvania.

If you work with spirit and gelatin duplicators, you have a choice of 157 Hammermill duplicator papers. They give outstandingly bright, sharp copies. Hammermill makes Double-Purpose Master Paper, too – for long and short runs. All Hammermill Graphicopy Papers are cut square and free from curl. Moisture-proof ream wrappers seal in the Hammermill quality and guarantee fast-running performance.

E-Z Carry Pak® lifts out – saves time, tempers and fingernails.

®Patent Pending

HAMMERMILL GRAPHICOPY PAPERS®

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Mechanize words to lower paperwork costs

Teletype tape reading and punching equipment offers a direct method of reducing paperwork costs by saving time—mechanizing such functions as:

- *Sending information* from one office to another, between plants, across country, even overseas. The Teletype Model 28 tape reader (above left) will transmit to one destination, or to many destinations simultaneously.
- *Recording and storing* data in tape. The Teletype Model 28 punch (above right) will produce tape as a by-product of send-receive operations or it can be used to combine data from several sources in one tape.
- *Repeating fixed data* such as addresses, invoice information and other reusable data, is a tape specialty.

The Teletype tape reader and tape punch may be used individually or in combination with other Teletype equipment. These units are compatible with existing communications facilities. They are also compatible with many business machines, to further extend their usefulness and cost-saving potential.

Teletype Corporation manufactures this equipment for the Bell System and others who require the finest in data communications.

Typing Tape Punch

Tape Reader

Send-Receive Page Printer

Automatic Send-Receive Set

FREE Model 28 line folder. Write Dept. 35G, 4100 Fullerton Avenue., Chicago 39, Illinois

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THE SORCERER'S APPRENTICE

MOST of us pay sanctimonious lip service to the ideal of efficiency in the office. Recognizing that systems analysis has brought significant savings—in time and money—to the clerical work cycle, we diligently search for every possible short cut in the processing of data, and ruthlessly eliminate every redundancy to be found in our work.

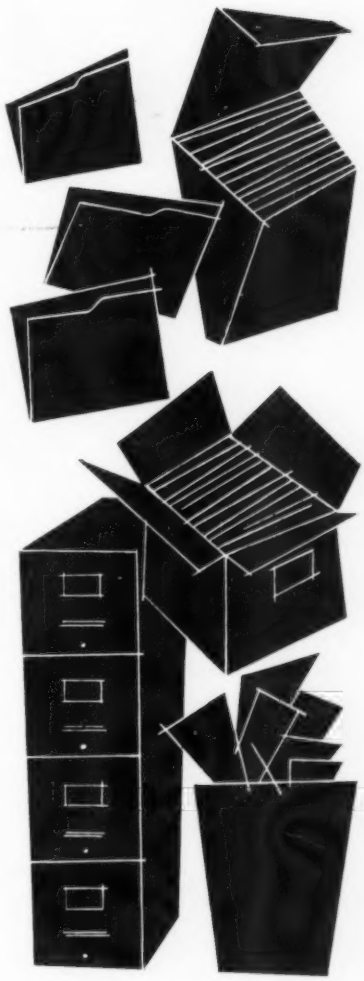
But improvements in the routine handling of the main stream of vital information, which the office exists to manipulate and process, are all too often matched by accretions in totally unnecessary work. It seems that for every inconsistency in actual work routine that we identify and eliminate, someone, somewhere is ready with a new and superfluous item to be fed into the company's communications channels.

Computer installations are notorious examples. Too many machines are being used, not to accomplish necessary work more efficiently than manual systems, but rather to expand and extend the total amount of work done. The effect: a deluge of information, in greater detail than ever before, going to more people than ever before. The result of the effect: executives more besieged by paperwork than ever before.

It's all rather reminiscent of the Sorcerer's apprentice, who was unable to stop the flood he himself had caused. On a smaller, individual scale, too, many of us are guilty of the same fault—the same tendency to fall into the alluring but unproductive patterns postulated in Parkinson's Law. Too many junior executives—and, for that matter, altogether too many senior ones—feel they increase their importance in direct ratio to the number of papers, reports, memos, analyses they can send out through the company. The longer the memo, the larger the distribution list, the higher the stature of the source, presumably.

It may be fun, but is it business? It takes the time of the dictator, which presumably is not too serious, since he wouldn't be writing it if he had anything more important to do. But it takes the time of a secretary as well, of the duplicating machine operator, the messenger, and, ultimately of all the various people throughout the company who receive it.

We have enough—more than enough—paperwork cluttering our companies simply because no one has yet caught up with the outmoded routine, the unwanted report, the circuitous system still grinding away in some remote corner. Let's guard against the creation of new and grandiose broadsides born on a dull afternoon when there isn't much work to be done.



Cadillac Gage gets tight production and labor control...reduces clerical costs by 30% with easy-to-use Automatic Keysort

NEED: fast, accurate management reports for controlling production of ultra-precision units—and a 475-man work force.

COMPANY: West Coast Division, Cadillac Gage, leading manufacturer of electric-hydraulic servo valve assemblies for missiles and aircraft.

SOLUTION: the easy-to-use, low-cost machines and punched cards of Automatic Keysort Data Processing.

METHOD: Keysort punched cards, mechanically code-notched with required information for rapid sorting, are created as original documents for 1) material planning, 2) job-routing and 3) labor distribution. Upon completion of each job, the accounting department automatically processes the collected information with the Keysort Tabulating Punch—internally coding the cards with actual and estimated time of job. This unique machine then automatically produces a tabulation of variance in work time by work center and order number.

RESULT: with the comprehensive, on-time reports made possible by Automatic Keysort, Cadillac Gage is now able to pinpoint any job in the plant . . . can determine the cost of labor and the total time spent on each job by department and individual clock number. Knowing where they stand, management can act *at once* to correct a profit-losing situation. Best of all, it's done without specialized personnel. Without restrictive procedures. And at remarkably low cost.

For a detailed report on Automatic Keysort Data Processing at Cadillac Gage, call your nearby Royal McBee Data Processing Representative, or write Royal McBee Corporation, Data Processing Division, Port Chester, New York for Case History 977.

ROYAL McBEE · *data processing division*

NEW CONCEPTS IN PRACTICAL OFFICE AUTOMATION

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"INPUT" IMPROVEMENTS MAJOR '60 ADVANCE

Magnetic ink character reading devices, optical scanners promise revolution in input problems and time lag—

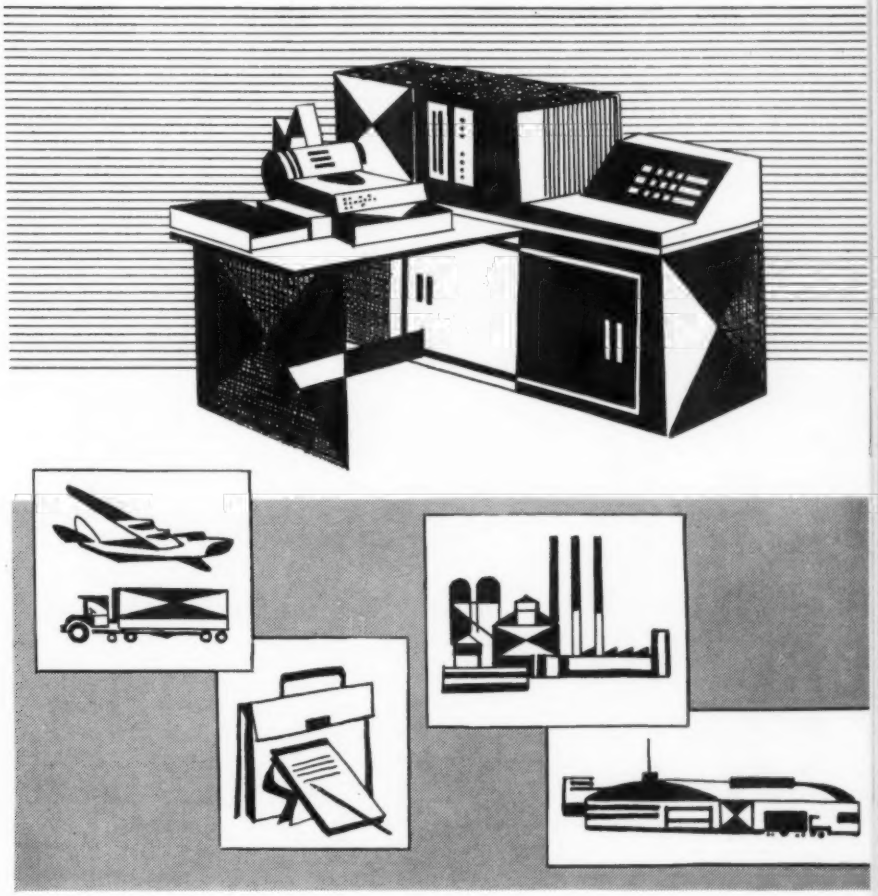
By ROBERT M. SMITH

INCREASINGLY SHARP – even aggressive – competition between major computer manufacturers –

Rapid advances in the development of "missing link" equipment – equipment which eliminates the necessity for manual translation of information coming from scattered points outside a company into some "language" acceptable to automatic data processing lines within the central office–

Great emphasis on the potentialities of "photomemory" units–units which can offer high speed random access to microfilm records of basic source documents not suitable for entry in a computer's "memory."

New devices make it possible, at least in theory, for different companies to automate all communications with each other.



Incoming telegraph messages received on tape

These are some of the major new developments that have characterized the first six months of the sixties, the decade when many experts believe automation will come into its full potential for the average company.

Perhaps the most significant advances have been those registered in the development of both magnetic ink character recognition, and optical scanning—each a possible path to completely automatic translation of printed characters to tape or cards. The meaning: elimination of the manual step always heretofore needed in most data processing systems—the translation of printed legible information into some medium acceptable to machine processing.

Two new developments speed input

Very large companies—such as Sylvania and Carborundum—have bypassed this step by the use of leased wires. A document created in the field was typed on a tape-punching machine. Then the tape could be put directly on a sending wire, reproducing data in legible form at the receiving end, and also creating a duplicate of itself. This second tape could be entered directly on tape reading processing machines, or converted automatically to magnetic tape for entry into an electronic system.

Two major developments—one relatively new, one that has been in existence a few years but is being heavily promoted now— seem to promise that many of the advantages offered by leased wires will be available soon to companies of relatively small size, or companies with a number of scattered communications points.

Western Union for some years has had what it calls custom-printed telegraphic forms—form messages preprinted on telegraph blanks which could be supplied to scattered points in routine communication with a headquarters office—salesmen in the field, warehouses, dealers, customers. By simply entering variable information in the blanks on the forms, and depositing the completed message at the nearest Western Union office, a report was completed.

But for companies which are large enough to boast a computer or tape reading processing machines at headquarters, the system offers even further advantages. For, in such instances, a Western Union teleprinter can be installed at the receiving office, and incoming messages can be telegraphed directly to the office. The teleprinter creates a legible copy of the information flowing in on a duplicate of the sending form, and also creates a second punched tape carrying this same variable information. This tape, on a tape-to-card, or tape-to-magnetic tape converter can automatically enter the incoming information directly into the data processing system.

New systems offer possibility of bridging the input gap . . .

And there is no need whatever for leased wires. A thousand small distribution or sales points—even individual dealers, if they are supplied with the preprinted forms—can all feed information into the central office in a form which makes it immediately convertible to machine language.

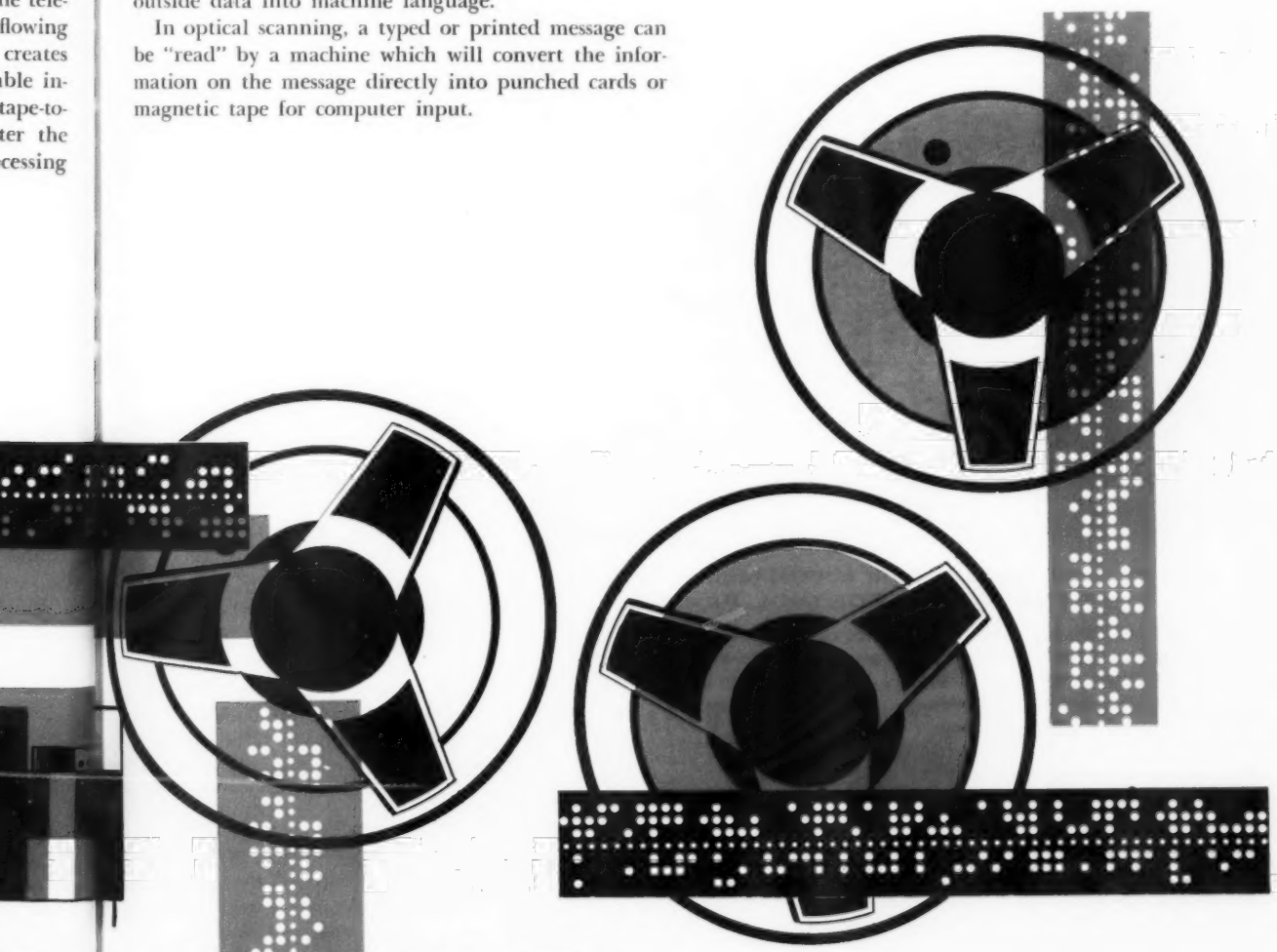
Manual conversion of incoming data into machine language is completely eliminated at the receiving station.

Optical scanning developing fast

This Western Union system has been available for some time, but the company is now promoting its use much more heavily. What is comparatively new in the field of automatic data translation, however, is the optical scanning principle, which offers the same possibility of automatic conversion of manually prepared outside data into machine language.

In optical scanning, a typed or printed message can be "read" by a machine which will convert the information on the message directly into punched cards or magnetic tape for computer input.

Similarly, the rapid development of magnetic ink characters, which can also be read by machines, has also tended to eliminate the long and expensive conversion of manually entered data into machine language. The magnetic ink devices, however, are useful primarily for documents that are prepared by the processing company, sent out to customers, and eventually returned to the processing center. Bank checks are an obvious example. The characters must be imprinted on the document in magnetic ink—and the preparation of such magnetic ink symbols or characters is a slow and painstaking process not always within the ability of the average printer.



input gap . . . the need to [illegible] all incoming information.

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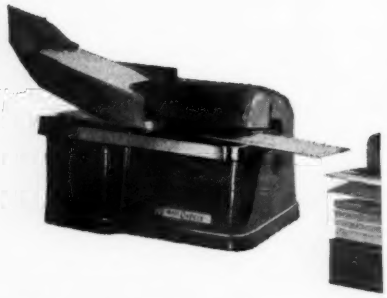

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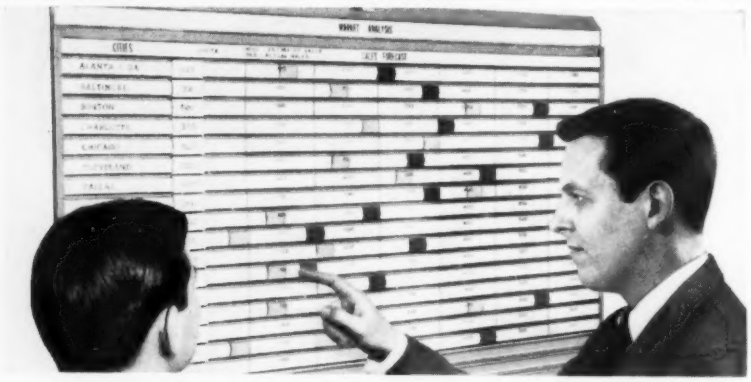

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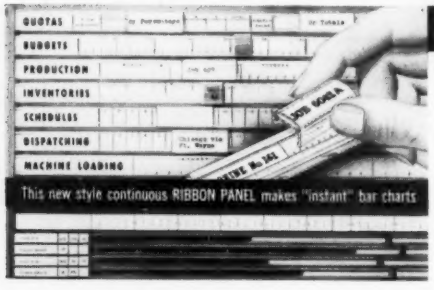

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Scanners not new

By contrast, an optical scanner can read ordinary typed characters, as long as the scanner is gaited to the particular typewriter font used to enter the information at its point of origin.

Actually, optical scanning, even though it is making its largest impact now, is as old in principle as the magnetic ink character recognition systems that have, to date, been far better received. An optical scanning machine was first built back in 1954 for the Bank of America by David Shepard, who had first conceived the idea of optical scanning while working in a Federal agency during the war. The optical scanner, developed to read travelers checks, was to be linked into an integrated data processing system, the other units of which were to be built for the bank by the Stanford Research Institute.

The design of the checks which were to be processed delayed the application of optical scanning devices badly. The dateline on the Bank of America checks was printed directly above the numbers which the machine reader would have to recognize. When the handwritten date entries of the persons using the checks crossed the printed numbers in any way, the scanner was unable to read the printed numbers accurately. And, of course, the varying handwritings of the bank's customers did exactly that.

The bank and Stanford gave up the optical scanning principle, and plumped for magnetic ink character recognition, which was not affected by any handwritten entries, even though the descenders of some of the handwritten letters or dates might cross the imprinted magnetic characters.

And, finally, when the American Banking Association decided that it was essential that all banks standardize on some kind of a common language, magnetic characters were chosen.

Meanwhile, Shepard continued to work on his principle: optical scanning. He eliminated the interference danger by using a glossy ink for his characters, and building his machine to recognize only the char-

acters printed in the glossy ink. He had formed the Intelligent Machines Research Corp., in Arlington, Va., to manufacture the scanners, and by the late fifties had made his first major sales, to the *Reader's Digest*, and to the Farrington Manufacturing Company, which bought the machine for leasing in conjunction with its own credit card and Charga-plate services. Farrington quickly became I.M.R.'s leading customer, and early in 1959, Farrington bought Intelligent Machines, and installed Shepard as its vice president in charge of research and development.

Other manufacturers follow

Meanwhile, other manufacturers, seeing many of the bugs eliminated from the optical scanning principle, had not been idle. National Cash, a pioneer in magnetic ink character recognition, now has announced that it too has an optical scanning device, and IBM and RCA, although neither now has an optical scanner in production, are both working on models.

Whoever finally takes the lead in optical scanning, it seems perfectly evident that the machines are here to stay—and that their use will mushroom within the next few years. Although limited mostly to credit card billing, bank dividend check processing, and subscription fulfillment operations to date, their possible extensions to other commercial and business uses are obvious. Since the machines can read any alphabetic or numeric characters, as long as they are adjusted to the particular typewriter face used on the input documents, they have obvious utility for automatic input of all documents, created within a single company, or between a single company and its dealers, no matter where such dealers are located. Or, they could be used to automatically process the figures for all cash register tapes in a department store. Inventory reports from scattered locations could be read by optical scanning devices at a company's headquarters, and entered automatically into either a computer or punched card processing cycle.

Already, optical scanning devices have been tested in a limited way by the Post Office, which has a unit that can read typed addresses on envelopes for 20 major cities, and automatically sort the envelopes by city. The Air Force is using optical scanning to convert typed pages automatically into punched paper tape. The tape, put on a teletype, can then transmit the entire typed page to distant stations.

Potentially, at least, the whole idea of optical scanning opens the possibility of entirely separate companies automating to a high degree their dealings with each other. Suppliers could give consistent customers pre-printed forms (as is already being done with the Western Union custom-printed telegraphic forms). An order could be typed directly on the supplied form by a clerk in the customer's office, and then transmitted either by mail or telegraph to the supplier. If wired in, the order information could go directly into punched paper tape for direct conversion to magnetic tape or punched cards. If mailed in, the order could be scanned optically and converted immediately into a

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Photomemory benefits

medium acceptable to machine processing.

That is perhaps the most significant development that has come into prominence during the first half of this year: a growing sophistication concerning methods of whipping the input problem, a closing down of the serious gap which has so far existed in most integrated data processing applications.

Another concept that has come into prominence during the first six months of this year is that of the "photomemory" unit—the unit which can offer high-speed access to miniaturized images of original source documents, letters, plans, etc. for human viewing. This magazine, in its January *Trends and Forecast* issue, prophesied that the development of such units would be as important during the 1960's as had been the development of electronic computers during the fifties.

Since publication of that article, business interest in the potentials offered by automatic retrieval of legible source information in the form of microfilm records has grown tremendously. Speaking before the sixth annual electronics conference of the American Management Association, held in New York at the beginning of March, John Waddell, of the Chicago Title and Trust Company, said:

"Let's consider the economics of size of electronic (computer) memory. For our own use in considering the feasibility of computer application, we calculated that the cost of storing essential facts about a deed on magnetic tape was 500 characters per dollar, and that we could get about 25,000 characters per cubic inch.

"But using photographic data processing methods, we would get 1,000 characters per dollar and 2,000,000 per cubic inch."

Advances in "information retrieval" have come about mainly through the use of high-speed access methods to microfilm images. Microfilm records have been combined with punched cards, to permit punched card selection and withdrawal techniques to isolate and produce a given individual record at high speed. Film chips, while

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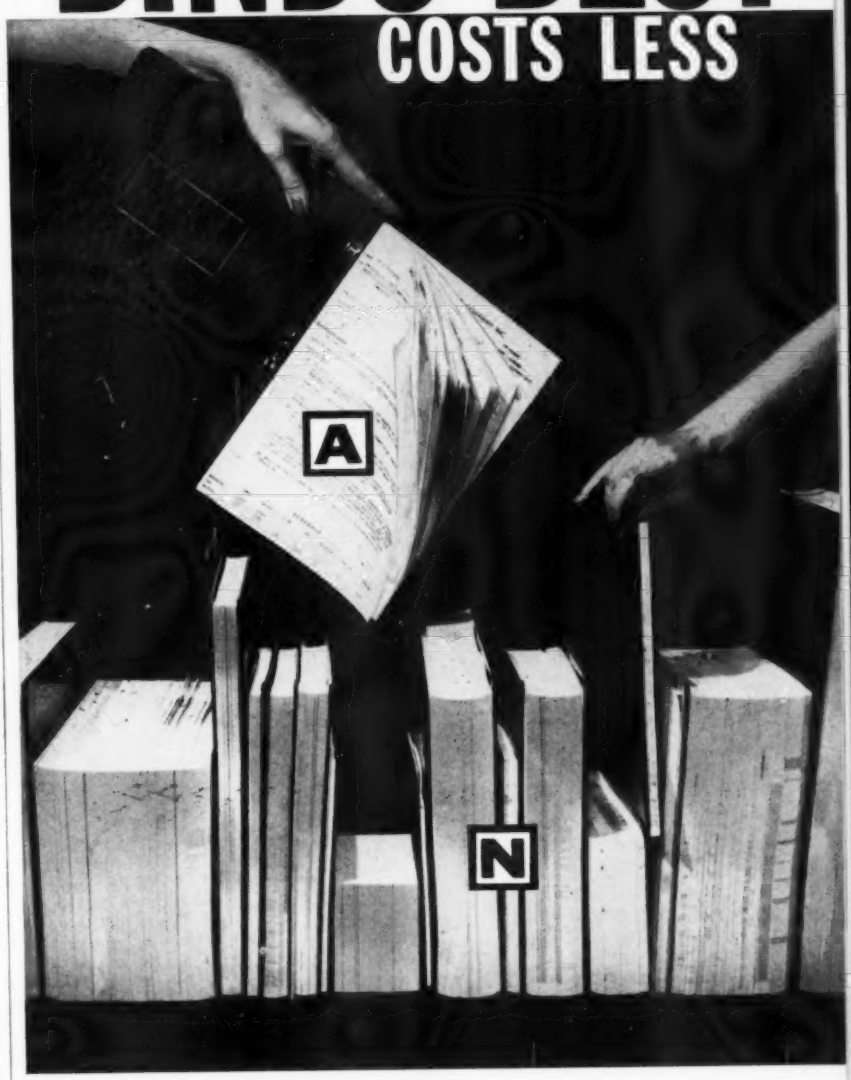

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NAME ..... TITLE .....

Competition grows

not so adaptable to use with existing data processing equipment as the aperture cards, offer even greater savings of space, and high speed access to any given record when used with special photomemory units.

Suggested this magazine's January article as the ultimate development in marrying photomemory techniques to electronic computer techniques, to provide a complete automated data processing sequence within a company:

"Perhaps even more important, however, are the implications of rapid access photomemory units in tandem with computers. Such units could relieve the great pressure for storage space in a computer memory. Instead of storing great quantities of facts and figures, a computer memory could be used as the master index for the information contained in photomemory. A query to the computer could produce directions which would activate the automatic selection techniques now being developed to retrieve graphic information. In a matter of seconds, one developer could produce hard copies of source documents or even of summary documents originally produced by the computer."

Thus, the two most significant developments for business automation in the first six months of 1960 have come not in computers, but in the area of associated machines which tied into a computer system, extend the advantages of automatic processing to areas where manual processing has been necessary until now.

But in the field of heavy electronic equipment, major manufacturers have displayed a significant change in their competitive methods so far this year. This year, for the first time, one manufacturer conceded that his company to date has sunk considerably more money into computer development than it has made from sales. But, he implied, so had most other manufacturers. The theory: to be one of the surviving organizations once less well-financed makers have been forced out of the field.

The competition's getting rougher, which probably means that new computer developments will be coming along at a faster rate during the few years ahead.

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AUTOMATION SLASHES PAPERWORK, RAISES MANUFACTURING EFFICIENCY

New production control system, now being pioneered at American Bosch, offers lower manufacturing costs, employment stabilization, improved distribution

Data on production schedules, service requirements, engineering changes are key-punched onto IBM cards at American Bosch Division, Springfield, Mass.

By JOHN ALLAN RHEA

"THE CONVENTIONAL wisdom protects the continuity in social thought and action . . . But there are also grave drawbacks and even dangers in a system of thought which by its very nature and design avoids accommodation to circumstances until change is dramatically forced upon it. In large areas of economic affairs the march of events . . . has again left the conventional wisdom sadly obsolete," wrote economist John Kenneth Galbraith in *The Affluent Society*.

One sector of this conventional wisdom, long revered by businessmen, is that lower inventories are somehow a desirable goal. Another, of more recent standing, is that data processing systems necessarily increase the amount of paperwork and that this also is desirable.

The reverse has been true in both cases since American Bosch Division, Springfield, Mass., installed a production control system that computes an entire manufacturing cycle when activated by a single punched card. Known as the Management Operating System (MOS), this method has saved American Bosch $60,000 in paperwork costs alone during the past six months. Inventories have risen 10 per cent to a more economical level, and the number of pieces of paper needed to control production has dropped from 261,000 to 203,000 a year.

MOS was developed by IBM to utilize existing random access "hardware," such as the RAMAC 305 used at American Bosch, a division of American Bosch Arma Corporation. The only innovations are the "software," or programs, which au-

tomatically control the six basic manufacturing functions: sales forecasting, materials planning, inventory management, plant scheduling, dispatching work through the plant, and operation evaluation.

The broad economic implications of this system are that it could enable virtually all American manufacturers to produce goods more economically, replace employment fluctuation with inventory fluctuation, and distribute goods when and where they are needed. The resulting lower costs, more stable employment, and fuller utilization of production could strengthen the American economy to meet its present challenges.

In many ways American Bosch exemplifies the dilemma of the nation's industry. As a manufacturer of diesel fuel injection equipment, automotive electrical equip-

Operator introduces single punched card into RAMAC 305 (above) to compute entire manufacturing cycle. Division Manager S. E. Miller (below) displays some of 15,000 parts controlled by Management Operating System.

Management Operating System uses existing "hardware" to control production

ment, LPG carburation equipment, and small horsepower motors, the company faces stiff competition from foreign producers—particularly German, Japanese, and British. No longer able to compete on the basis of price, American Bosch seeks to win its share of the market with the quality and availability of its goods.

C. W. Perelle, president of American Bosch Arma Corporation, summed up these efforts: "Six years ago we began an extensive modernization program of our manufacturing and product distribution facilities costing more than $5 million. The effect of this program soon was felt throughout the organization, particularly in the manufacturing control and administrative functions, where punched card equipment had been used effectively for some 12 years. We felt it necessary to have a data processsing system sensitive enough and fast enough to react to our modern factory and distributing facilities. A bottleneck in the processing of our paperwork could not be tolerated. We need management reports as soon as possible to ensure that we are getting the best return on our new facilities and that we are offering our customers the best possible service. This system will do so."

American Bosch Arma Corporation, Hempstead, N. Y., has two commercial plants, at Springfield, Mass., and at Columbus, Miss., which evenly divide gross annual sales of $40 million. The Springfield facility is the only one to have MOS.

Robert Stewart, who conducted feasibility study, reports that MOS saves $120,000 a year through reduction of shop orders. Future applications of system include cost restandardization, lowering of set-up costs.

The system was ordered in May 1959 after a 16-month feasibility study conducted by Robert Stewart, staff assistant to the division manager, and his staff. Stewart estimates the total cost of this study at $25,000. After a two-week training period for personnel, operations began December 1, 1959. Annual leasing costs for the RAMAC 305 and peripheral equipment are about $60,000.

The MOS operation consists of three basic steps: input of punched cards, internal processing, and output of action documents and management reports.

Input comprises three types of information: production schedules; service requirements, which reflect after-market or replacement part business; and engineering changes, which enable the computer to adjust the up-to-date bills of material stored internally.

During the processing stage the computer scans a magnetic disk file containing 10 million characters of information and establishes the time relationships needed to obtain or produce each component of the finished product. Within three minutes the computer can determine the effect of the order on all 15,000 parts which go into 1,000 American Bosch end products. This processing consists of the following operations:

1. Conversion of production schedule orders to requirements by manufacturing dates (American Bosch calls these dates M-days and assigns a number to each working day of the year. July 1, 1960, for example, is M-Day 083);
2. Measurement of requirements against stock on hand, stock on order, and re-order points;
3. Determining the necessity of preparing shop orders, by M-Days;
4. Determining the necessity of preparing purchase requisitions, by M-Days;
5. Re-evaluation of economic order quantities of production based on changing base factors;
6. Periodic re-evaluation of reorder points based on accumulated statistics;
7. Cancellation or rescheduling of unreleased shop orders.

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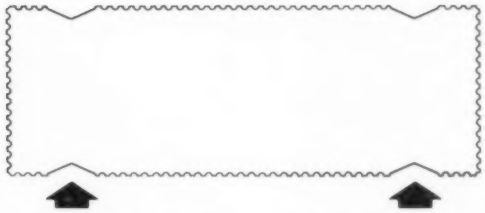

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Computer protects American Bosch against shortages, production delays

Output takes the following forms:

1. Shop orders for economic order quantities, by M-Day. These take into account lead time and flow time, and list standard costs for each component on unit shop assembly orders. They are issued 10 days before production is scheduled to begin.

2. Stock planning status reports for released shop orders on all parts. These are prepared when an order is released to the shop or on request.

3. Periodic evaluation of optimum inventory levels, based on active economic order quantities and re-order points. American Bosch estimates its annual inventory costs at 18 per cent of value.

4. Suggested changes in, or cancellations of, open purchase orders. These are prepared for the use of the production control department.

5. Immediate answers to inquiries on the status of any part. These come from the factory and amount to about five or six a day.

These procedures are based on an advanced method of level-by-level net requirements planning. Coupled with this is automatic low-level coding, which determines the lowest common denominator unit in which a part appears and accounts for the total requirements of that part.

In the plant and within the system the ingredients that go into the end products are divided into successive levels, "Christmas tree" fashion. At the base are raw materials. Above these are the component parts fabricated from the raw materials and purchased parts. At the next levels are minor assemblies, sub-assemblies built from the components, and major assemblies constructed from the sub-assemblies. At the top of the tree are the finished products made of various major assemblies.

The computer protects American Bosch against the development of material shortages and production delays by the simple expedient of checking, at electronic speeds, down through each material level. It does this for each production schedule that is received.

When an order is received for a thousand units of a pump to go into work on a given M-Day, for example, an IBM card is punched and put into the RAMAC 305. The computer then searches out the first inventory level, major assemblies, and computes the quantity of each assembly needed for 1,000 pumps.

The computer indicates how many assemblies are available, how long American Bosch will need to make them if they are not available, and on what M-Day they should be scheduled for production. At this point, based on a formula used by American Bosch, the computer also decides if it would be more economical to produce 5,000 assemblies, for example, rather than only 1,000.

The computer continues to check down through the level-by-level structure of American Bosch's bills

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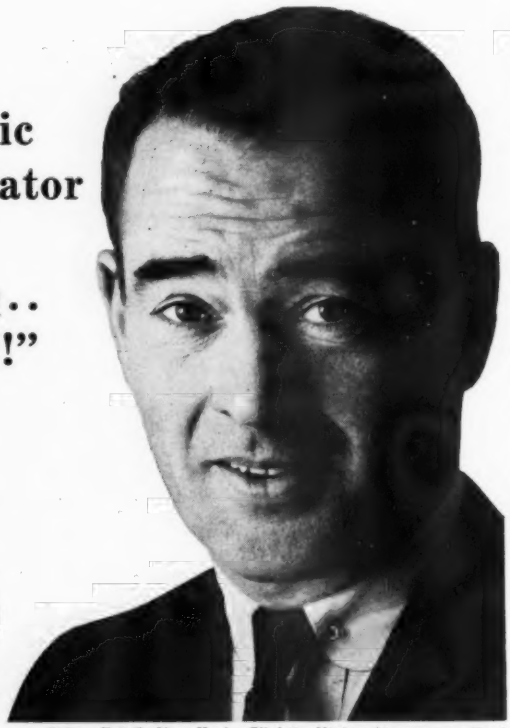

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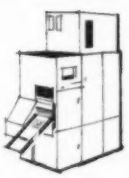

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Clerical savings exceed $120,000 a year

of materials to determine what must be done at each level to satisfy the order and to assure proper material controls. Ultimately, the electronic inspection process may reach the raw material level if there are shortages at previous levels. In the event that enough material is not on hand or on order to meet the various M-Day requirements that have been established, American Bosch receives an immediate warning to expedite the purchase of that material.

The major savings due to MOS, according to Stewart, are in the reduction of orders from 18,000 to 14,000 a year. Since the preparation of each order costs American Bosch $30, this reduction is worth $120,000 a year. And reducing the number of orders by 4,000 is made possible by the system's ability to compute the most practical quantity of goods for each order.

Although American Bosch's sales have declined due to foreign competition, Stewart reports that the number of production workers has remained steady at 863. The clerical work force has dropped from 117 to 97, where it is expected to stay. This stabilization also can be traced to MOS, which predicts future production needs.

Additional intangible savings

The $120,000-a-year savings do not include intangible benefits, such as the reduction of paperwork handling, minimizing of stock shortage conditions with their accompanying expense of expediting purchase or production of needed materials, and the reduction of plant set-up costs resulting from the lower number of orders processed.

This third area, set-up costs, is a future target for savings. Because it is often necessary to split orders, which cost $20 to $100 each, Stewart says it is too soon to realize savings in this area. He believes that consolidation of orders, planned for the future, will save about $60 apiece.

Another benefit is the increased availability of production control records and a reduction in the amount of space needed for them. By storing all information in the RAMAC's disk file, 40 file drawers, containing 108,000 tab cards, have been eliminated. In addition, production control reports are available daily instead of on the sixth day of the following month. These reports have been made more comprehensive with the inclusion of cost of sales figures, by product, for the accounting department. And, finally, tab card handling has been reduced from 100,000 a month to 6,000 a month.

A final benefit to be gained by American Bosch is improved methods of cost restandardization. Before the beginning of each fiscal year, the division reviews its cost structure and adjusts it to reflect current conditions. Now this operation requires 700 man-hours; soon it will take 40 man-hours. Savings to be realized by automation have been tentatively estimated at 30 per cent.

Within a year and a half, Stewart hopes to apply MOS to tool control. Each year, American Bosch uses more than 12,000 perishable tools, almost all of which are purchased from outside vendors. When a program has been developed, the computer will establish control over these tools and provide minimum-maximum usage figures to indicate when a given quantity of a tool should be ordered.

Future applications of MOS can be made on existing data processing equipment, according to IBM officials. This equipment may range in size from a small punched card unit to the multi-million dollar commercial computers. The only ultimate machine requirement is a one-half second access time to any record.

The flexibility of MOS extends to all types of manufacturing operations – basic producer, converter, fabricator, standard assembly, standard assembly with options, and customer specified assembly—where economic gains can be made through more efficient management.

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PERSONNEL NEEDS REACH NEW HIGH

America's growing industry is offering abundance of jobs, peak starting salaries in attempts to fill executive talent pool

By EDITH CONNER

SOME 400,000 men and women—the just-graduated Class of '60—are free to enter a business world that is virtually booming: It's offering them an abundance of jobs from which to choose—and the highest starting salaries in employment history.

Company recruiters, who've been scouring the nation's campuses for likely candidates, as well as college placement services, reveal that the salaries being offered graduates average three to five per cent higher than those offered last year. From an average $447 a month in 1959, they've been upped to $458 a month, plus "bonuses" for students with special qualifications. And a larger percentage of firms across the U. S. have been engaged in this "campus hunt." "More companies want to hire more men at more money than ever before," says Frank S. Endicott, Northwestern University's placement director, who recently completed a 26-state survey of 211 companies in his fourteenth annual study of employment trends. It's reported that companies are looking for 19 per cent more graduates to fill this year's jobs.

And what are they looking for? In their search for top-quality people, recruiters have been "highly selective," according to Labor Secretary James B. Mitchell. Companies, too, are reported to be eyeing their applicants with a lot more cautious scrutiny than ever before. While engineers and scientists still head the "most-in-demand" list and their starting salaries are highest, there's been a lot more interest shown this year in liberal-arts graduates. (Liberal arts education has, of course, been becoming increasingly attractive to business in the past few years, as noted particularly in the widening of business school curricula.)

Reaction against conformism

It's interesting to note, too, in terms of business's pendulum-swing reaction against conformism and the "organization man"—a reaction that set in in the late Fifties — the type of man that recruiters, and the companies they represent, are seeking.

According to a recent *Newsweek* article, the ideal recruit, "according to one Easterner," is "a married veteran with a good B average who has demonstrated leadership and initiative through extracurricular activities." Any one of these attributes, the article adds, might be worth an extra $25 a month in salary.

Highest in demand, as business continues its expansion and perfection of machines—and accelerates its programs of research and development—are graduating science majors, such as engineers, physicists, chemists, and mathematicians. And on this level, there's been an increase noted for graduates with advanced degrees, primarily to expand research and development staffs. This, however, is the area where the biggest shortage of talent lies; enrollment in engineering and science courses has been steadily dropping in the past few years. It is in this area, then, that companies are doing their heaviest recruiting—and paying top starting salaries to get good people. The shortage of good men is bringing about a more ready acceptance of women in these fields, especially in the field of electronics. Boston University reports that women with liberal-arts degrees but with majors in mathematics or chemistry can command jobs in industry paying salaries up ten per cent over 1959.

College placement agencies also note increased competition for industry's campus recruiters in the graduate school, which is doing more and more recruiting of its own. While a higher wage level is business's principal answer to this competition, it has also been noted that an increasing number of companies are offering to finance graduate study to get the top-caliber seniors.

But all this, while symptomatic of an economy which is still expanding, if not booming at quite the rate predicted at the end of 1959, poses its own problems in terms of staffing the office and administrative functions of the typical company. Obviously, the college recruitment picture reflects the difficulty companies anticipate in staffing their executive positions. Not at the moment, perhaps. The number of junior executives being recruited probably exceeds the number actually needed. But it does mirror company concern for having a large enough pool of potential executive talent to draw upon for needs in the future. In other words, American companies perhaps are recruiting more college graduates than are actually needed right now as a bank, a reserve, so that they will be able to draw upon protected resources for their higher positions in the future.

If this is true, it may be proven to be a shortsighted and expensive policy. For the practice of hiring executive talent from other companies—its proponents call it "getting fresh blood," its opponents decry it as "raiding"—is growing to be more of an accepted standard every year. The company which has the most elaborate training and recruitment program at the junior executive level may merely be preparing its competitors' future top executives. There is no indication, in the changing times occurring today and the growing confidence characteristic of the average worker, that the recent inertia that kept so many people bound to one company all the way up the line will continue. And, if the business climate is changing, as there are many indications that it is, it will be precisely the executives with most initiative and drive who will be most tempted by attractive, outside job offers.

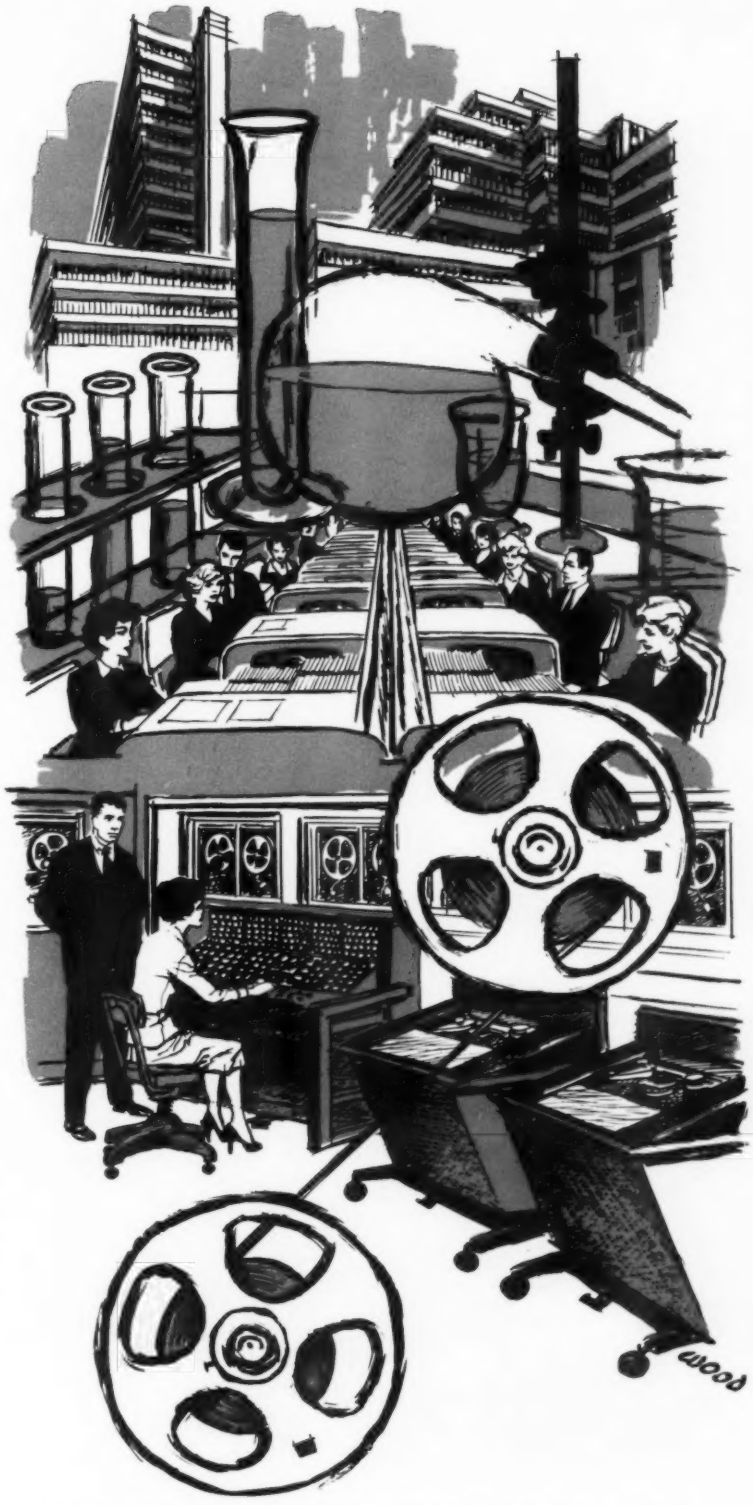
AMA reports high turn-over

A few statistics on this score are interesting. A recent AMA report cited these figures:

During the next two years, 64 per cent of the firms replying said they will be forced to bring in key executives from the outside. Another 35 per cent said there is a 50-50 chance of doing so.

The emergence—and use—of executive recruitment firms is one indication of this trend. A factor certain to re-enforce it is the growing interest of many old line companies in diversifying their interests. Entire research and development staffs are engaged in some instances in determining what new products a company might profitably make. Yet many of these new products could—and often do—call for a whole new subsidiary organization under the parent company, with all that that implies in the matter of new staff and personnel at all levels.

It seems clear that the trend toward joining a company when fresh out of school, and coming out of the same company at retirement



Despite fears of unemployment, giant strides being made in automation, research and development, create new and more challenging job openings.

Graduation-to-retirement company career is going out of style

age with a placid past, a pension, and a "crystal palace" work experience is on the wane.

If this is true—and the rapid spread of many old line companies into totally new endeavors suggests that it is at least as valid as any assumption that can be made these days—it poses many real difficulties for the massive, "saturation" recruitment programs that have been carried on now for so many years. One problem of the mass recruitment and training policy is that promotion to the higher echelons is necessarily slow since there are so many candidates for the better jobs. This is not only not true of a new company; it *cannot* be true. The new concern has too much work to accomplish immediately to worry about the top echelon men and women it's going to need 20 years hence. It doesn't usually have the capital—or at least has other uses for its capital—to invest in over-insuring its future leadership. But it can offer opportunity for rapid advancement as the company itself makes progress—advancement which will be the more rapid because the initial employees are in on the ground floor—and there isn't any long-term habitation at the top executive level.

Staffs move with executives

Under the circumstances, it's obvious which companies are going to attract the most ambitious, and, in many instances, the most able personnel.

So far, so good, one might say—as far as the executive level is concerned. How does it affect the shock troops, the rank and file clerical force of the office?

Not too obviously, perhaps, but there will be an effect. The average executive, when he moves, is very apt to take at least his secretary with him. But assuming that he's going into a new environment, a company that's starting more or less from scratch, that company will need people all along the line. It will call on every executive moving in to suggest a staff for his own department. And the average executive—or the average supervisor—is going to think in terms of the most effective workers in his former establishment. So as executives move first and then their assistants, the "raiding" will inevitably extend to the lower clerical and staff levels as well.

The outlook for the immediate future, then, is one of increasing "turnover" in the most desirable work groups—the most able executives, the most experienced clerical and technical workers.

The difficulties will be aggravated by the fact that the prime age group, the workers in the 25-35 age group, will rise only slightly in relation to the rest of the work force, while the absolute number of workers in the 35-45 age group will actually decline. We are facing an era, then, in which the youngest, most inexperienced workers and older workers will be the only groups increasing in numbers.

In terms of the way the office has traditionally done its work, this might not be too serious a problem, as long as there is a sufficient influx of younger workers every year. As long as clerical tasks are simple, and can be broken down into easily assimilated duties, relatively untrained personnel do not present too much of a handicap.

But here automation raises its—in terms of personnel needs—ugly head. For the main effect of automation is to take over the most simple tasks of the office, freeing human workers for the more exacting and more demanding tasks. Yet, these are exactly the jobs that require some degree of judgment, maturity, and experience.

True, perhaps, the overall effects of automation may be to lessen the number of workers needed to accomplish a given task. That is, undoubtedly, one of the major purposes—perhaps the main *raison*

Many top corporate positions are going unfilled because demand simply exceeds supply of qualified executives.

d'etre of automation. But automation can do little more than hold the line against the overpowering demand for goods and services of a mushrooming population. As fast as the labor force may expand, as many jobs as may be eliminated by automation, there is no real possibility of an overabundant labor supply in the clerical market at least for the foreseeable future.

More economic growth seen

And these are the prospects, assuming that the country moves along only at its present pace of expansion. But that is a pace which many economists and political leaders think is far too slow in terms of the advances being made in other countries of the world, and particularly in the Soviet bloc nations. We are facing a national election this fall, in which the Democrats are already pledged to economic measures designed to raise national production, if they should win; and increasing pressures are being put on the so-far uncommitted Republicans to liberalize the conservative policies that have characterized the Eisenhower administration. Whoever wins the national election, it seems inevitable there will be some loosening of the restrictive measures that have made our rate of expansion lag behind Russia's.

So, on top of the expanding population, we will undoubtedly move into an economic climate in which all national production sights will be raised.

All putting extra pressure and extra demand on the critical personnel group in the prime age brackets, and making them more desirable and more necessary to every growing company.

What can be done to meet some of these possible personnel problems of the sixties?

Overstaffing for protection, simply to preserve a large pool from which future executives can be chosen, might be looked at with a critical eye. There will be raiding. It will affect the personnel—or at least the best personnel—of most companies in a highly competitive market. Might it not be wise to lessen the personnel pool, thus providing more room and more chance for advancement for the people who *are* chosen? Outside recruitment could then be depended on for

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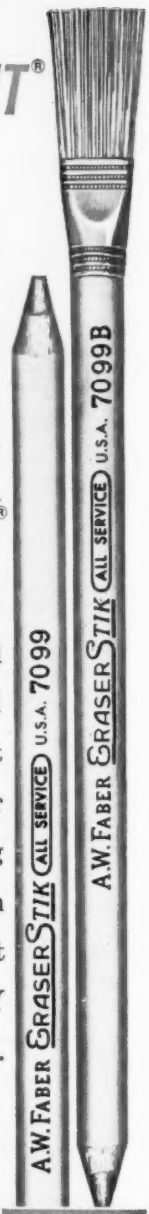

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Review personnel needs

needs that come up in the future that couldn't be met because the company has a lean rather than an overabundant staff.

Reviewing all promotion policies —for both clerical and executive workers—to ensure that initiative, effectiveness, and value to the company, rather than seniority, or any other irrelevant factor, determines who shall move up fastest. This would at least offer a measure of protection as far as keeping the best workers is concerned—and incidentally help the company's competitive performance substantially, too.

Round peg in round hole

Doing everything possible to ensure that personnel assignments, especially with workers who show more than ordinary promise, fit the worker's talents and abilities. In the words of Mrs. Arness J. Wickens, economic advisor to the Secretary of Labor, Department of Labor, speaking before the recent National Office Management Association conference in Montreal:

"Whenever you can put a square peg in a square hole, or a round peg in a round hole, that employee is more likely to stay on the job."

"In recruiting, too, you should be prepared to employ more mature women if you have not already discovered this in the 1950's. Those customary, long standing low age limits – 'Wanted: Experienced woman secretary. No one over 35 need apply.'—just won't be realistic. Ask yourself if the job clearly requires a particular age. I doubt if many of your jobs do. Your choice, overall (there will be exceptions), will be young girls just out of school or mature women. The older women, on the whole, stay on the job better than the young girls."

In the years ahead, office executives might also do well to examine some of the artificial job barriers that have been erected in American companies. Is it actually necessary that every executive should be a college graduate? That he be married? That he enter the company at some particular level if he is ever to move up in the company echelons? Or even that the executive be male? Why? Are the reasons valid or merely traditional?

Hugh Ward, Senior V.P., retires after 41 years

Hugh Ward, senior vice-president and advertising director of Geyer - McAllister Publications for 41 years, retires July 1 in accordance with provisions of the company's retirement plan. Active in publishing circles, he has served as chairman of the Merchandising Papers Committee of the Associated Business Publications. On June 29, Geyer-McAllister tendered a dinner in his honor at the Waldorf-Astoria Hotel, New York.

Mr. Ward will be succeeded by John M. Smythe, vice-president and Midwestern manager of the firm.

Pitney-Bowes chief favors profit sharing

Profit sharing is "not just another trimming on the fringe-benefit package," but "a wholly different approach to the traditional boss-worker relationship." This is what Joseph J. Morrow, personnel relations vice president of Pitney-Bowes, Inc., told the 12th annual conference of the American Society for Personnel Administration.

"Far from being a 'give-away,'" Morrow said, "profit sharing provides a dignified, economically sound, and morally justifiable method of bringing self-interest and group-interest together."

In reviewing the 24-year experience of Pitney-Bowes with profit sharing, he contended that such programs "help get employees on the team, make it easier for them to have an intelligent understanding of company problems and hopes, and give them a sense of responsibility and the incentive of being true partners."

"They learn to take the 'downs' as well as the 'ups,'" Morrow concluded. "Integrated into a generally sound industrial relations program, profit sharing is perhaps the best tool for achieving harmony and an awareness of the common interests of labor and management."

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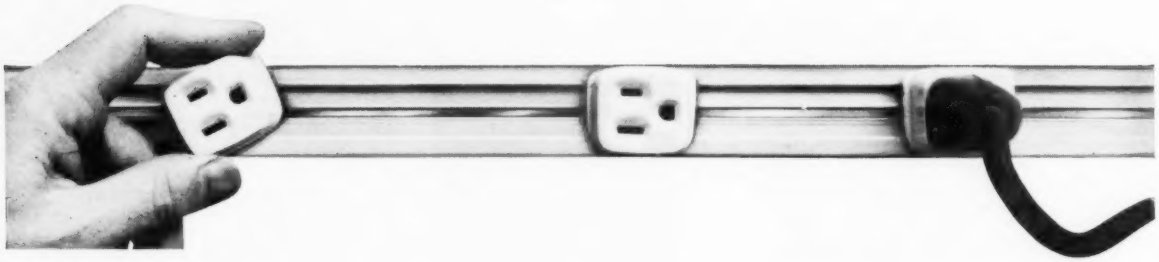

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BUILDING MANAGEMENT'S SECOND TEAM

Management must improve or replace current executive development programs if it is to replenish its ranks

By EDMOND F. WRIGHT

Wright-Porter, Inc.

PERHAPS the most difficult task that modern business management has to perform today is to create its own image; in short, to build a hard-hitting and effective second team. This means teaching and training its upcoming executives—extensively and intensively—in order to get balanced development with integrated growth.

Admittedly, executive training of some kind is always taking place. This training may be on a formal, functionally recognized basis, or on an informal, intuitive, functionally non-recognized basis, or somewhere between these two spectral terminals.

It is generally known that people —workers and supervisors alike—tend to observe, to watch, to listen and to imitate the actions of their superiors and executives. It is thus obvious that whenever an executive acts, or refrains from acting, his every move is being observed. If subsequent events indicate that his move was a wise one, it will be remembered and probably imitated by the people in the organization who observed it.

We may draw the generalization, therefore, that "actions of present executives tend to set the pattern of training for future executives" in an organization. Thus we find that the informal method of training—osmosis—takes place through the combination of two simultaneous forces at work: action on the part of present executives, plus observation and listening on the part of workers and supervisors alike.

Another fact, which we are an industrial nation such as the United States must recognize, is that many of our people are progress-minded. They want to better their position and rise in the organization. It has been said that the American dream is to become President, and in many ways our people are still motivated in this direction. This fact is one that all senior executives constantly need to remember, because it is another reason why some form of executive training is a *must* for all companies—regardless of size or category. To fill this need, however, a number of questions must be answered:

What should the individual executive's attitude be toward the balanced development and integrated growth of the men who report to him?

Whether or not a company has a formal training program, we must remember that the company is a perpetual organization. Our basic concept is that the company will continue to function even though individual workers, supervisors, and executives change from time to time. The top executives of the company, therefore, have the responsibility to ascertain that the succession of indi-

Executive pyramid developed in three stages

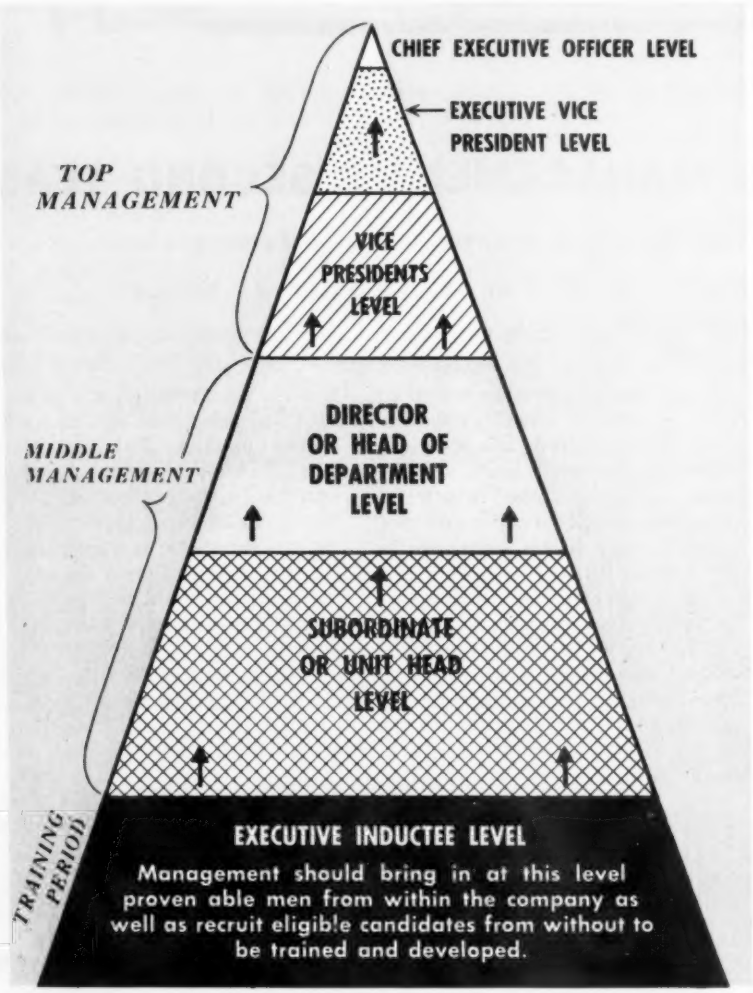
viduals charged with functional responsibilities will be orderly and effective, so that the organization will be perpetuated.

In every company, many people are dependent upon the continued success and "perpetual" operation of the company. This is another reason why executives have a major responsibility—social as well as economic—for the continued operation of the company.

There is also the fact that many executives today have their future personal benefits – through retirement programs – directly associated with the continued and profitable operation of the company. Finally, most executives take a personal pride in the continued effective operation of the company with which they have spent a major portion of their working life.

For these and other reasons, therefore, many executives, regardless of the size of the company, take a deep and continued interest in the balanced development and integated growth of the people who report to them. They realize that these people will, during the future years, carry on the executive functions and responsibilities of the company.

In many companies, the concept of "the Three Stages of Men" can be observed. This concept divides a man's working life into at least three fairly definite stages. The first stage is the "learning stage." This is the period during which the individual learns about the complexities of his job and his position in the company. The second stage is the "doing stage," a period during which he performs the tasks and assumes the responsibilities for which he at first had received training. Finally, during the third period, the "teaching stage," he reaches the position in life when he passes on to the next generation—frequently the group in the learning stage—the benefits of his experiences and his accumulated knowledge.


CHIEF EXECUTIVE OFFICER LEVEL
EXECUTIVE VICE PRESIDENT LEVEL
TOP MANAGEMENT
VICE PRESIDENTS LEVEL
DIRECTOR OR HEAD OF DEPARTMENT LEVEL
MIDDLE MANAGEMENT
SUBORDINATE OR UNIT HEAD LEVEL
EXECUTIVE INDUCTEE LEVEL
Management should bring in at this level proven able men from within the company as well as recruit eligible candidates from without to be trained and developed.
TRAINING PERIOD

Three steps of executive pyramid represent three stages of each individual's growth within company. However, some men are content to halt their growth at a certain plateau of company pyramid.

Formal program is best

What should the management of a company consider when thinking about an executive training program?

If the company is of average size, and is a public company rather than a private or "family" company, a formal, well-structured training program probably will be the best approach. A formal program avoids the charges of secrecy and favoritism by other company officials. Furthermore, a formal program, by its very nature, will tend to get more publicity and more recognition, be more scrutinized, and be more "accountable" than is typically the situation with an informal program.

It is also recognized that a formal program will have to meet standards established by group deliberations rather than individual fiat. Also, the fact that a formal program is being sponsored usually means that a great deal more thought goes into its planning, execution, and evaluation than otherwise would be the situation. A formal program frequently can be utilized as a "motivator" for members in the organization interested in self-development. Finally, a formal program demonstrates to any doubters that in business and industry the door to progress and advancement is still open for individuals with ambition,

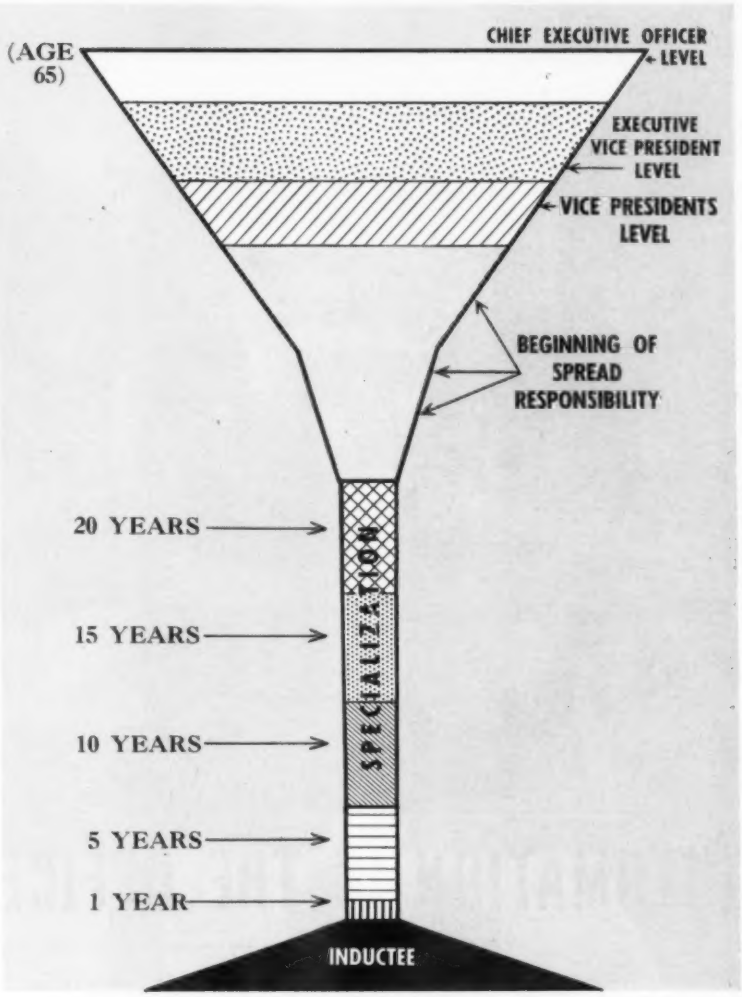
energy, imagination, and leadership —in short, self-motivation.

How should the training program be related to long-range company plans?

The expected growth of the particular industry, the state of the business cycle, the expansion program of the company, the expected results from the research and development program of the company, and the retirement schedule will all have to be incorporated into the executive training program. Ideally, the expected requirements for trained executives at given future dates could be forecast, and on this basis a net number of candidates could be determined. To this number is added the expected attrition and loss allowances for unexpected developments such as resignation or death. From such a forecast it is then possible to pick out the number and the type of executive positions that need to be filled, as well as the time when a new incumbent will be needed. The job specifications for each executive position involved, and conferences with incumbents and other functionally competent executives will normally provide the data necessary to develop the educational and experience requirements for each position.

The next step in the sequence is to comb the organization for potential candidates to be trained. Normally, this strengthens the morale of the personnel by demonstrating a policy of promotion from within. In some cases, however, it is not unusual to provide "new blood" by introducing candidates obtained from outside the organization.

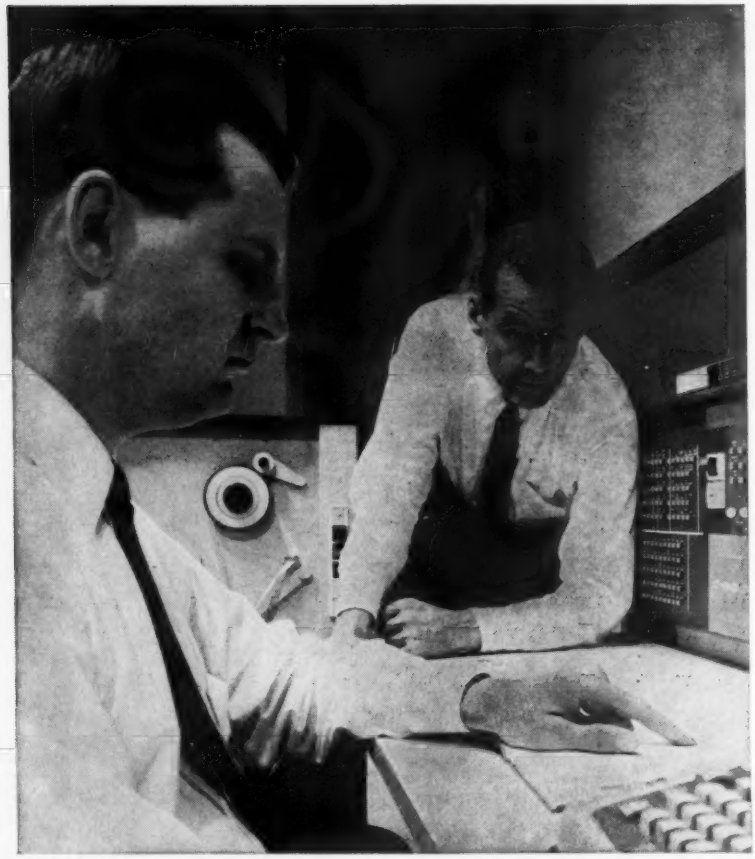
Of the several methods used to obtain candidates from within the company, one frequently used is selection of candidates by members of the executive group. Another is the nomination of potential candidates by members of the executive group. The actual selection is usually performed later by a committee. A third method often used is the invitation to selected executives in certain echelons and functional areas of the company to nominate themselves as potential candidates. A fourth method sometimes used is a statement issued to members of the executive and managerial group announcing the initiation of an executive training program — often giving reasons why such a program is now deemed necessary. The announcement may state the proposed criteria governing admission to the program and invite any interested executive or manager to make a formal application for admission to the program.



Similar view of executive development shows how inductee receives broad background at beginning, then specializes throughout most of career. Finally, broad experience is essential for top management.

From whatever source the candidates are obtained, it is customary later to have each one provide a sheet. Each candidate is then given, in a typical situation, a series of multiple interviews with the following functional representatives of "top management:" an executive in a functional area in which the candidate has indicated that he expects to be trained, several executives from related functional areas, an executive from the personnel or training department, and a representative from an outside consulting firm. At this time, the candidate is also given a comprehensive health inventory and a two- or three-day health examination at a medical clinic.

During the interviews, a consistent endeavor is made to obtain a comprehensive, multi-phasic picture of each candidate. This includes an inventory of his interests and attitudes, his experience and education, his ambitions and aspirations, his thoughtways and value judgments. Throughout the interviews, the emphasis is focused on the long-term



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Program must fit needs

aspects of the training program, the many sacrifices and self-denials which undoubtedly will be required on the part of a candidate and his family during the training period, the competition between the various candidates for the position, and the uncertainty of the future. Throughout the interviews, a policy of "low pressure selling" is normally pursued. Every opportunity is provided for each candidate to withdraw from the program without "losing face."

How can a program be chosen that is best suited to the company's needs?

Such a program cannot be taken out of a book or a professional manual. Each program has to be "made to order" to suit not only each company involved but to suit the needs of each individual participant in each specific position. This means that it becomes necessary to match all the data and information obtained about each individual candidate with the educational requirements for each specific executive position. This matching operation is one which needs the addition of pooled judgment obtained through the operation of a committee composed of experienced executives and trainers. Preferably, each candidate ought to be present to participate in the matching operation. It is usually a long and exhausting task to piece together a training program that will best meet the needs for each individual candidate for each specific position.

Construct entire program

The matching operation, when completed, sets the stage for the development of the next stage of the program: the construction of the content of each training element of the entire program. This particular aspect is one which includes the accumulation of all the knowledge and skills which should be imparted to the trainee. It means the composition and writing of text materials; the determination of training sequences; the construction of tests and other evaluation devices; the training of trainers; the scheduling of work sessions, observation sessions, class and laboratory sessions.

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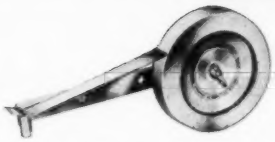

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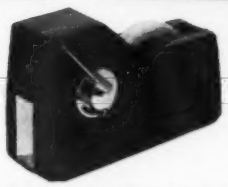

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Check program results

How can a company ensure employee acceptance of a training program?

If the executive training program has been evolving along the lines suggested above, the basis for employee acceptance has been an integral part of the program itself all along the line. The fact that the organization was combed for eligible, qualified, interested candidates signaled to the employees of the firm that changes and new developments could be anticipated. For instance, the combing included a message addressed to all members of management advising them of the initiation of such a program, inviting them to apply if they were so inclined and if they met the qualifications outlined for potential candidates. In no case in which our organization has been involved has there been any problem in initiating a program or in getting employee acceptance of it.

How does management check on the effectiveness of the program?

Effective performance on the job, of course, is the ultimate test. However, one may get a preview of potential job performance in terms of the degree of effectiveness demonstrated at each check point in the process of executive training. As has been indicated previously, the objective to be attained is the development of a well-balanced individual who possesses an integrated outlook on life—a person who is cognizant of the complexities of contemporary life; aware of the manifold conflicts which permeate our society; conscious of his responsibilities to the company, the industry and society as a whole; sensitive to human aspirations and frailties; unobjectionably aggressive in obtaining increased unit productivity; ready, willing and able to "size things up" correctly, obtain group agreement on "what to do," and then "get things done" efficiently. In other words, the effectiveness of the training program can be appraised against these criteria in terms of the actual performance on each training assignment. The important things to remember are:

1. Determine the best places that can serve as "check points."

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Build executive pyramid

2. Make sure that all the persons concerned are aware of the "check points," i.e., instructors, candidates, executives and the "checkers"—in other words, the panel of people who have been delegated the functional responsibility of periodically ascertaining that the program is operating on schedule for each participant and in each unit of the company.

In checking on the effectiveness of progress, particular attention is given to the areas in which each candidate had indicated special need because of demonstrated limitations. General attention is given to the functions of management to make sure that mastery of these areas becomes a "habitual state of mind."

Management has responsibility

In summary, it is essential that a sound executive development program be constructed around the following requirements:

1. No program will work unless top management is fully behind it.
2. The program must be "made to order" for the particular company.
3. The program must be specific for each candidate; it must meet *his* needs and *his* position requirements.
4. The selection of candidates must have careful and painstaking thought behind it.
5. Detailed time and content schedules must be developed.
6. Top responsibility rests with the president or senior executive head, but someone should be placed in charge of the supervision of the overall program to check on compliance and progress.

By following this simple set of rules, far-sighted management can plan to build the executive pyramid soundly and well, and in doing so, it will see that capacity in depth is achieved. In adopting a well-organized plan of growth for its executives, management will find that the hit-or-miss policy, so common to many companies, has been replaced by an orderly, well-planned and constructive technique of team building. Effective administration of the development program by the first team precedes success by the second team.

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LET'S TAKE A SIMPLE APPROACH TO SYSTEMS

Observation, common sense most important qualities in analysis

By ROBERT SHIFF and
ALAN NEGUS
Naremco Services, New York

IN OUR CONSTANT obeisance to the need for systems and procedures review and improvement, one major factor is all too often neglected. The "why" is always clear enough, but the "how" all too often is glossed over.

The person, other than the experienced systems person, who is charged with the responsibility for overall systems improvement, may be the most convinced of the disciples; he may be the most energetic of workers, the most accurate of observers. All are of little avail without a planned and knowledgeable pattern of approach to overall system improvement, and within that framework, a knowledge of how to identify wasteful or inefficient procedures, and how to pinpoint specific areas that have an important potential for elimination or improvement.

Note the sequence of events. First the approach to overall improvement. Then—and only then—the attack on individual procedures.

This emphatically does not mean an exhaustive analysis of the work of each department, in which every procedure, every piece of paper, every work motion throughout the company is checked. Such minute analysis may be valuable in a once-in-a-lifetime systems revision, or, for instance, the design of a whole new system preparatory to installing electronic data processing equipment. But it is far too time-consuming and expensive for a regular procedure auditing program. Rather, we are suggesting a periodic audit in which the areas where the greatest immediate savings can be achieved are identified in sufficient detail to construct a list of priority systems revision projects.

This might be criticized as the fire-fighting approach—the solution of individual problems rather than overall ones. But this objection is varied if improvements are made as a matter of periodic routine, rather than as an emergency measure to meet a critical situation, and all improvements are made within the context of the overall company system and its needs.

In other words, what we suggest

is an annual "run through" of all company departments, much in the fashion of an internal audit. When we have seen the flow of work within each department, and how the work of one department ties into that of another, then we can begin making improvements in the areas where we will reap the most immediate and the most important benefits.

And those benefits, most often, unless we have total systems, changeover as our objective will be realized in terms of dollar savings, or a speed-up in processing time.

Where should the analyst concentrate his efforts – what are the signs that a particular area offers greatest potential for significant cost improvement?

There are three main ones:

Whenever the trained observer sees many clerical people all doing the same kind of work, it is a signal for audit review. The work pattern they are following may be relatively efficient, but obviously even a slight improvement in the processing sequence, since it affects so many people, will save a substantial amount of time and money.

It pays to put the spotlight on the same form being used by a great many different departments, even though the work force using it in any one place, is relatively small. This is the reverse of the first instance. A great many people in a great many different locations are working with the same basic set of facts. Any improvement in the form or other paper being used will save time for a good many workers even though they may be spread over several different departments.

By means of the "audit review," the trained observer can spot any obvious, or seemingly obvious, inefficiency in any department observed. This may be signalled in a number of ways. If department cost figures seem completely at variance with the number of papers processed and the number of people working, there is obviously a reason for investigation. Or, if a number of people in any one department seem to be pitching in on a variety of tasks other than their own, that is either an indication that they don't have enough work of their own to keep busy, or that the worker they must help is bogged down with too much work, or that work scheduling needs improvement.

Danger signals of inefficiency

This last area—that of actual inefficiency in a department—may often be the hardest one to spot, strangely. The first two danger signals are almost automatic—a number of people doing the same task, or the same form or paper being used in a number of different places. But the third area can be deceiving. We recall one order department we surveyed that seemed reasonable in size. Its budget did not seem excessive. But when we compared the number of orders it actually had to process in the course of a year with the number of workers employed, and the costs of the department, we found that it was taking an average time of four and a half hours, and an average cost of $14.90 to process one order.

Equipped with facts (inventory of procedures, equipment in use, people by category, and forms and reports) and knowledge of the things we want to look for, we are prepared to start our systems audit. Where do we begin?

If your company has a functional table of organization, that is a good starting point, a point which can serve as a type of road map for all the subsequent work of the audit. It is also a good idea to start equipped with department budget figures, since comparison of these figures with the work a department actually accomplishes is often the quickest clue to its efficiency or inefficiency. Other helpful aids include floor plan layouts and job descriptions.

Then the audit can proceed on what we call a "skyline" approach. Following the departmental align-

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ment suggested by the table of organization, the observer simply "walks through" the whole company system, not analyzing each department in depth, but checking it on an audit basis. His first step on entering each department is to sit down with the department manager, explain his mission, and review with him the work of the department and its purposes within the general structure of the company. He sees the intake of the department—the information flowing in; its quantity; the basic steps the department takes in processing that information; and the output of that department—the information it sends on or out to subsequent departments in the processing line.

Right at this point, if the auditor is prepared with department budget figures, a review of the quantity of work performed by the department can often give a strong clue to the department's effectiveness. Work load figures related to operating cost data can be used to develop unit cost information for processing paperwork—a figure which in itself may raise important questions.

This first step can also give the analyst an immediate picture of the state of the department through the personality and manner of the manager. If he seems uncertain of some of the details of his department's work; if he doesn't have a very clear idea of the volume of work performed, these are obvious clues that the department may not be well run. Less obvious, but often equally significant, is a general air of heavy pressure and semi-crisis; people constantly running in and asking questions about their work, etc. In the ordinary line processing department, this sort of behavior usually signals ineffectiveness. Ineffectiveness breeds trouble—and trouble is expensive.

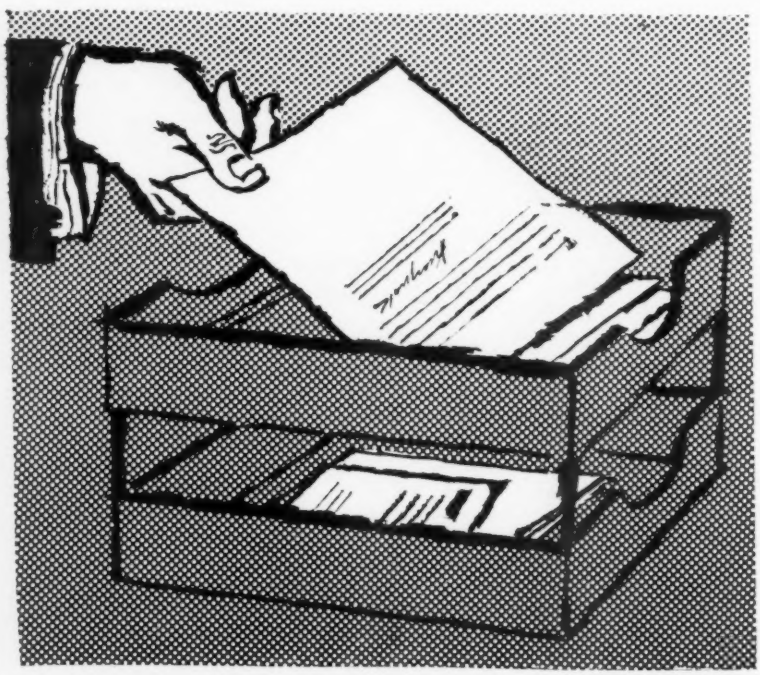
Look for unexplained activity

In other words, the analyst, simply by keeping his eyes open and using his common sense, begins to get the feel of the department at his first entrance. He follows this with observations of department personnel at work, and perhaps interviews with some of the workers. He looks for unexplained activities that do not seem pertinent to the department's main purpose. And he notes the information the department is working with and the forms in which it is received. Activity backlogs and procedural roadblocks are brought into view as potentials for remedial action.

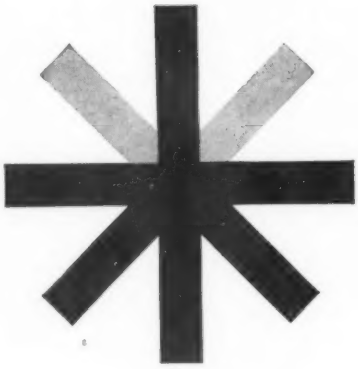
This procedure is followed, department after department, through the office, with the analyst making notes as he goes along of things that strike him as questionable, or meriting further investigation. So far there is no detailed analysis, no time-consuming, exhaustive investigation of every bit of work done in every department reviewed. The analyst, rather is looking for symptoms of trouble, or indications of a situation that *may* be perfectly healthy but could also be an indication of waste.

And following this pattern, even the relatively inexperienced analyst will find, as he moves along the paperwork trail, that improvements in ways of doing things will occur to him. He does not recommend them right away, or even discuss them. He simply notes them. He may find in a department subsequent to the first ones checked that the method he thought cumbersome is actually needed for some purpose of the remote department. He may not. He may find opportunities to share existing equipemnt for purposes of consolidated use. The point is that at this stage of the game, he makes no recommendation for change of any kind. He is not trying to reorganize the company; he is trying to save the company money and time in the areas where the most significant results can be realized in the shortest possible time.

(To be continued)



Flood of memos and other papers may be clogging company's line of communication.



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RECEPTION AREA: HUB OF THE OFFICE

Sales opportunities can be lost by poor taste in this vital area of first impressions

By SIDNEY G. RODGERS
Office Interior Designer

DO YOU WANT to lose sales? The best way to do it is by trying to cut corners on the appearance of your reception area. This is because the reception area is one of the best point-of-sales opportunities for all types of organizations.

Almost daily companies are losing sales because of a flip remark by a receptionist, too long a wait for a "too busy" executive, or a reception area made offensive by poor taste in decorations or uncomfortable furniture.

Reception areas form the hub of the office circulation. They are the starting point for the whole system of internal corridors and foyers. Their design and functioning are important because they create that all-important first impression for the visitor.

Executive reception room at Godfrey L. Cabot Co., Inc., Boston, features planters set into floor. All furniture is by Knoll Associates in black, white, and stainless steel.

In contrast to modern decor, National Biscuit Company's executive reception room is furnished with tasteful, traditional furniture designed by Rodgers Associates and made by Desks, Inc.

The essential elements of a sales-making reception area are contained in the following 14-point list:

1. Location—Locate the reception area at the point of entry, making use of even the elevator lobby area. The reception area should be at a central location from which direct routes to important offices can be made easily.

2. Size—The main reception area should be designed to accommodate normal visitor traffic. It should be uncramped, yet not so oversized that it creates an uncomfortable and unfriendly atmosphere for the visitor.

3. Design—The reception area contributes to the company's public relations and should reflect the image of the company. A false impression of being "too lush" or, at the other extreme, miserly, will create the improper first impression which can "un-sell" the visitor.

4. Privacy—The reception area is the guest room for the corporation. It should have privacy and not be a part of the bustle and "family business" of office routine.

Clean, modern lines of reception area reflect company image at Kelly-Smith Co., New York. Desk is by Herman Miller Furniture Co.; chairs, coffee table, sofa, by Knoll Associates.

Fiberglas is used in the chairs, table, drapery, and planters of Owens-Corning reception area on 13th floor of Sykscraper of Glass, New York. Even acoustical tiles in ceiling are made of Fiberglas.

Reception desk dominates lobby of Griswold-Eshleman Co., Cleveland, to provide feeling of attention to visitor. All furniture is from The General Fireproofing Co., which also did interior design.

OFFICE DESIGN

5. Entrance-Exit—Visitors should come and leave from the same location, enabling them to unload hats, coats, bags, and other accessories.

6. Reception Desk — It should dominate the room to provide a feeling that attention is being given to the visitor and that he has not been forgotten.

7. The Receptionist — Beauty should be secondary to friendliness and refinement. Care should be taken in training the receptionist on basic facts about her company and supplying her with adequate literature for public distribution. Her voice should be modulated rather than that of a broadcaster. Her clothing should be stylish rather than spectacular.

8. Escape Route — Executives should have a means of movement between various sections of the office without going through the reception area. This is so that they can avoid contact with a visitor prior to appointment time.

9. Furniture—Comfortable and, as far as possible, individual chairs should dominate. Visitors are often reluctant to share their missions with strangers. Upholstered pieces that are too soft and too low should be avoided. Such pieces put the visitor at a disadvantage when he attempts to rise to greet the man he is meeting.

10. Extras—Provide plenty of ash trays, matches, and cigarettes in containers. A coat closet will contribute neatness to the room and fewer wrinkles to the visitor's wardrobe.

11. Clocks—A clock is a handy reminder to the visitor as to how long he has been kept waiting. It also helps to provide the receptionist with a watch.

12. Refinements—Avoid excessive use of sound conditioning that will rob the reception area of a living room atmosphere. Soft music is an excellent added touch but television is impractical. (Imagine a commercial for a competitor's product being broadcast while a guest is in your reception area!) Air conditioning is a good sales maker.

Do we really make this desk too good ?

Recently, some people have suggested that we do.

We guess they mean we should use less steel or lighter steel, or that perhaps we should use fewer reinforcement welds. Or maybe that we should cut out some of the extra features—like drawers for example—that our desks have built in.

We've done some thinking about these things.

Our designers tell us that 260 pounds of good steel go into an average 30″ x 60″ Stylemaster desk. Any less steel than that, they say, would result in a desk that would soon begin to shimmy and look shabby.

We looked into the many desk reinforcement welds we use. Maybe one or two of these welds are unnecessary. We're not quite sure. But we haven't seen a Y&E desk top in any shape other than completely flat.

We could use bolts or metal screws instead of welds, but we know that our welds are as strong as our desk steel. They won't become loose and won't shimmy.

A lighter desk, with fewer reinforcements, our designers say, would mean a big BOINGGG every time a drawer was banged closed, or the desk was kicked. We might get away with it by using sound-smothering insulation strategically hidden away in key spots.

We thought about it.

But, if you ever happen to kick a Y&E desk or slam its drawers, that solid, honest CHUNK you'll hear is not smothered by anything other than sound construction.

We searched our desks for extras which we could eliminate and found a couple of possibilities. We could make something called removable case strips *fixed* by welding them. This removability feature is expensive and some people never use it. However, because of it, if you want to rearrange the drawers of your Y&E desk in your office, you can. Removable case strips make it a cinch. Meaning that shifting drawers in a Y&E desk never tries the temper.

We did find one thing we could take off our desks without impairing its function. Our name plate. It reminds you of the quality you've purchased. But we'll leave it off for you if you think it's too frilly.

If our desks are too good, we can't say we're sorry. It may, in fact, be that the styling for our basic lines will never grow old, because it just seems to fit into most situations quite nicely and is so easy to live and work with.

We make several different kinds of desks now—different styles for different office functions, executive to secretary. We may add more. But we'll continue to make desks and other equipment that is functional, operates smoothly, looks good, and lasts a little bit longer than many things seem to these days.

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Model of old English stagecoach adds quaint touch to modern offices of G. H. Walker & Co., Wall Street investment brokers. Reception room opens off elevator lobby, leads to executive offices, sales rooms.

13. Company Promotion – Any company trade marks or product displays generally should be done with professional guidance. Dusty rows of product packages or blatant company insignia usually will discourage rather than help to sell a visitor.

14. Extra Reception Areas—Large firms should plan additional conference-type reception areas for such departments as personnel or sales. Many executives now have conference rooms near their offices. This provides room for meeting without disturbing confidential papers, or for a second meeting place should an important guest arrive unexpectedly.

It is wise to remember that the visitor is a guest of the organization. He did not come to dinner but on business. His business can be productive to you if his first impression of your company is friendly but businesslike.

The sale you have to make will often depend on the first impression you make. It is this impression that will be a part of a visitor's call report to his superiors.

Aluminum screen separates personnel reception area (foreground) from general reception area at Godfrey L. Cabot Co., Inc., Boston. Screen is backed by translucent plastic secured with white metal trim.

Telephone is provided in professional sales reception studio, Eastman Kodak Co. All furniture is by Herman Miller Co.

OFFICE DESIGN

Although shunted to the background,

or hidden entirely within the office decor,

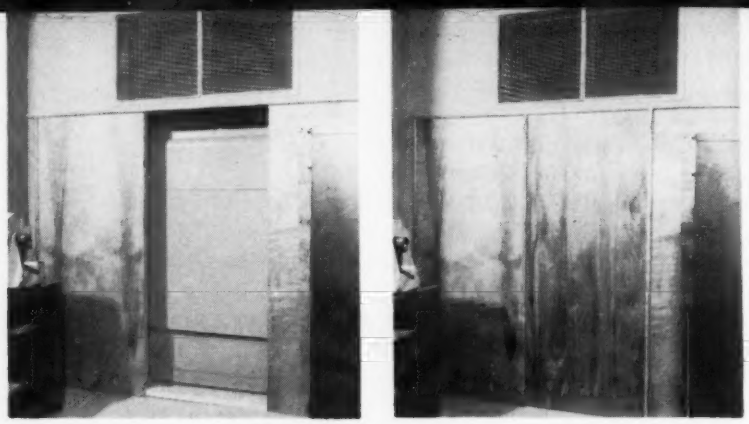
AIR CONDITIONING VITALIZES OFFICE

By MARY D. LYONS

AS AN ACTUAL element in design, air conditioning is usually obscured by the more obvious and purely visual components of office decor. This is primarily due to the fact that such systems or units are practically always either hidden completely, or at least kept in the background, well camouflaged. Air conditioning, however, touches expansively and beneficially upon a business firm's health, morale, and economy.

As a design factor, air conditioning has produced a logical and steady progression of improvements in office planning. It has changed the size and location of usable areas and therefore, the very shape of buildings. It has made inside space habitable, and it has greatly stimulated the installation of better lighting. Finally, it has done much

Heating and cooling outlets are inconspicuously placed in grillwork across ceiling of president's office at American Electric Power Co., New York. System is completely independent of building's central air conditioning unit.



Now you see it . . . now you don't. Sliding birch doors conceal 10-ton Typhoon air conditioner, yet permit access for routine maintenance.

to influence the design concepts of lowered ceilings, new types of partitions, and new materials.

The health and morale factors of air conditioning are obvious. No matter how attractive an office may be, most employees simply cannot be happy and productive if they are forced to work in uncomfortably warm surroundings. In fact, many office workers, fed up with having to sit miserable and perspiring at their desks, have simply left their jobs, and every personnel manager is familiar with the persuasive powers of air conditioning in influencing potential recruits to join the company's clerical or secretarial staff.

In non-air conditioned offices on hot, humid days, typists lose their tempers and executives growl; even office managers have been known to become waspish. Nobody feels like working, and mistakes are easily made. Very often, management reluctantly passes the word "Close at 3 p.m. today, it's just too hot to work!" And so the company loses two hours for every employee. Therefore, it is a wise management that demands air conditioning for its staff simply as an economic necessity.

There are, of course, some saturnine eccentrics among executives and clerical persons who testily complain that air conditioners are "unnatural." They claim that air conditioning tends to have an embalming effect upon them, and turns the office into a kind of mausoleum. Others say that is has destroyed a certain spirit of informal comradery which, they fondly recall, occurred frequently in the good old, hot, pre-air conditioned days when sweltering office employees would suddenly and joyfully throw off their jackets and gather around the communal water cooler to complain merrily

Offices of National Lead Co., New York, are cooled by 15-ton, 5-ton Kaiser air conditioning units hidden in ceiling above chandeliers.

about the weather and relive old camping trips.

However, physicians have pointed out that by reducing air-borne pollen, air conditioning is a boon to hayfever sufferers. Many modern hospitals have adopted air conditioning. At least one dispassionate medical study shows that an extremely hot environment unrelieved by air conditioning can affect the heart.

Though one is apt to think of air conditioning as a fairly modern acquisition, crude attempts at cooling air were actually made thousands of years ago. Oriental potentates had huge fans of leaves attached to bamboo poles with which they were fanned by servants. One Persian sultan arranged to have a house built with a double wall; an army of slaves kept the space between the walls packed with snow hauled by hand from a nearby mountain.

According to architect J. Gordon Carr, "Air conditioning represents a large part of any office's costs, but the system and its refinements concern the office planner, regardless of where the costs are allocated. Real costs begin to rear their ugly heads whenever changes are made in areas 15 to 20 feet back from the windows. Air conditioning systems exist which provide almost complete flexibility with few changes, but these are not yet within the budget of most office planning projects."

Good results have been accomplished, however, with flexible duct runouts—outlets for air conditioning which can be moved as easily as lights. In fact, units containing a light outlet and an air conditioning outlet are now being used when the desired results justify the cost. Every day we move closer to the point where this may be the rule rather than the exception. The difficulty arises where a large space is cut into more small spaces than there are outlets available. Then it is back to the main duct, and this is where costs pile up. Another difficulty arises when one space requires dif-

Outlets of York air conditioning units at Standard Vacuum Oil Co. are visible, but unobtrusive, in ceiling of company's auditorium.

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Air conditioning serves many needs

OFFICE DESIGN

ferent air conditions than exist in adjoining areas. Good controls are available to help solve this problem, but money must also be available.

An air conditioning problem which arises in nearly every office planning project is the matter of occupancy at times other than the normal working day. The executive area, for example, may be used at any time. Other areas are used after-hours periodically, as in the case of accounting departments. Such areas might be served by independent air conditioning systems; otherwise, a whole section of a building—perhaps many floors—must be cooled and ventilated to serve a few hundred square feet. For isolated areas, such as an executive office, heat-pump units are being employed. With a flick of a switch, heat can be supplied in the cold season, while the reverse cycle will supply cooling. One of the first examples of this heat-pump system is illustrated on page 59.

In old buildings, even though no changes may be contemplated, there is always the chance that the building may be remodeled or extended at a future date. It is essential when putting an air conditioning system into this type of building to combine flexibility and salvage value at a minimum first cost.

Sectionalize air conditioning

Because systems which need large air ducts sometimes find no space for the ducts, or interfere with work space and the general appearance of the building, it may be wise to try to sectionalize the building into areas which can be served separately by small systems. This reduces the amount of ductwork and the cutting, patching, and redecorating which has to be done. In such cases each area can be served by individual or multiple installations of commercial packaged equipment.

Air distribution ductwork is usually made equal to the class of construction of the area in which it is installed. If installed in a well-decorated office building or a finely appointed store, any ductwork can be concealed by using the space between ceiling and floors.

In many old buildings, where the ceiling and floors are constructed on wood joists, this is impossible. The ductwork must be exposed. A well-decorated area could have this duct run along the ceiling cove. It would be furred-in to match the decorative scheme of the area.

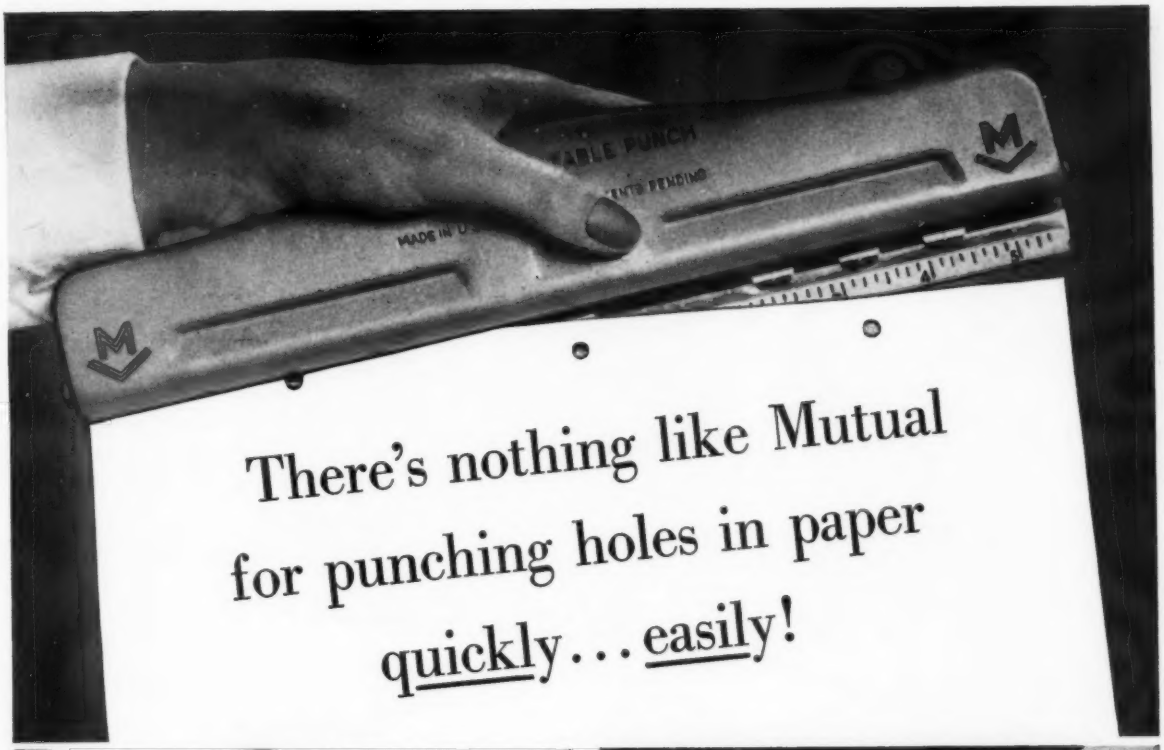
Where a general area is being cut up into sections for air conditioning, each section must be carefully checked for the relationship of private offices or small rooms to large open-floor areas. Where there are many small rooms it might be well to discuss the use of single conditioners in each room, with a commercial package in the open area. Perhaps a ductwork system can be added to the commercial package to distribute air to individual offices or rooms.

In remodeling programs it is often feasible to make provisions for an air conditioning system by installing a dropped ceiling. This permits concealed ductwork above the ceiling with air diffusers. These can be located to give an even distribution of air. In such cases, a central station or commercial package is ideal.

Even in the remodeled building, it is still wise to divide the various areas into sections. By choosing proper air distribution with adjustable controls, a satisfactory overall control can be obtained in this set-up with a simple thermostat.

In multi-package installations, each package is controlled by its own thermostat. This makes for a diversity of operation of each package, often reducing operating power costs.

Information for this article was contributed by Abbeon Supply Co.; Admiral Corp.; American Motors Corp.; J. Gordon Carr & Associates; Ebco Manufacturing Co.; Emerson Radio and Phonograph Co.; Frigidaire, Div. of General Motors Corp.; Hotpoint, Div. of General Electric Co.; Kelvinator Div., American Motors Corp.; Radex Corp.; The Trane Co.; Viking Air Products, Div. of The Laublower Co.; and Virginia Metal Products, Inc.



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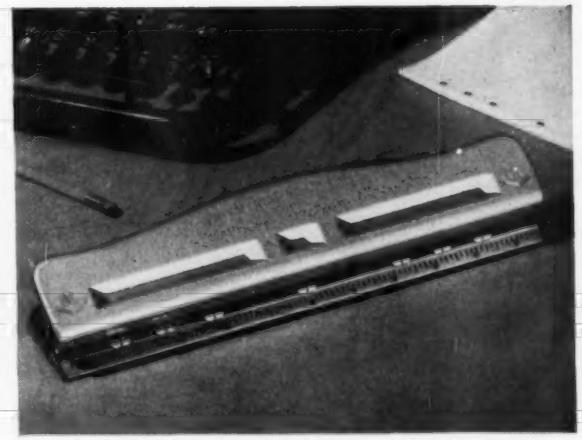

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Delegates to 41st international NOMA conference examined "New Dimensions for Office Executives" and found

NEW ROLE FOR OFFICE MANAGER

THE RAPID GROWTH, both "vertical" and "horizontal" of the office has forced office managers to grow, too, and promises to continue to increase their stature and status in their company, Herbert H. Lank, President, DuPont of Canada, Ltd. said in his keynote speech before the recent National Office Management Association conference in Montreal.

The conference, held May 22-26 at the Queen Elizabeth Hotel, had as its theme, "New Dimensions for Office Executives." A business exposition was held in conjunction with the conference, at Montreal's Show Mart.

This year's international conference, NOMA's 41st, was, in terms of the number of speakers and subjects covered, by far the most ambitious program the organization has ever attempted. After the keynote speech, the business meeting, and a brief panel discussion on the afternoon of the opening day, all further areas were covered in concurrent technical sessions — 16 on Tuesday, May 24, and eight on May 25. During the evening of the opening day, 12 concurrent open forums were held.

Subjects covered ranged from "How to Live with Your Job" to "Operations Research in the Office," from "Systems and Procedures Programs for A Small Office" to "Planning Personnel Requirements in the 60's."

The keynote speaker, in citing the reasons for the increased importance of the office management functions, traced some of the developments that have transformed the office picture:

"Most men in offices 40 years ago were certainly not executives as we think of the position today," he said. "They made few important decisions. Clerical work, their main concern, was ground out by whatever primitive methods had been inherited from the past. Our current concept of human relations hardly existed in business then. Human resources, including those of the office manager, we now know were cramped and wasted.

"Modern management, on the other hand, tries to make informed decisions as opposed to intuitive ones. It forecasts future events by using the most reliable economic techniques available instead of merely guessing about next year's conditions. It uses psychological

Presidency of NOMA changes hands as gavel goes to R. B. Hodges (right), office manager of Dennison Manufacturing Co. Stepping down is Walter Emmerling, manager, general office services, Procter & Gamble Co.

Office manager must be "well-rounded specialist"

knowledge to formulate personnel policy; technical services to help keep customers satisfied; market research to gauge new needs; and research and development to plan and prepare for expansion."

More and more effective tools are increasing the "technology of the office" at an astonishing rate, he told the opening day group.

"The office has indeed evolved, and is still evolving into a more important role in the organization. It has ceased to be the passive 'keeper of the records'; it has become a dynamic force, a nerve center within the modern firm. To it are fed data, information, problems —stimuli and challenges of all kinds; and from it come increasingly mature, informed, sound deductions and responses for the guidance of management. It can provide fast answers when conditions require them, or reflective ones based on extensive study.

"The office has grown both vertically and horizontally within its new orbit of action. In depth, or vertically, by discovering new methods of dealing with the traditional office functions, and in breadth, horizontally, by assuming the obligations and initiative to move into new areas of responsibility. Without resorting to the crystal ball, I think we can safely predict that the dimensions will continue to expand in both directions.

"The effect of this growth on the office executive is a dual one: He is increasing in stature and status. In stature, because many of the new developments fall within the scope of the office operation, making it increasingly important to the firm and to management. In status, because the value of his contribution brings him closer to the top management function."

In order to meet this new role, and these new responsibilities, the office manager has had to grow, the DuPont executive continued.

New techniques to learn

"He has had to become a better qualified man and a broader all-around person than he was last year, or the year before. He has had new techniques to learn, new problems to face, new responsibilities to handle, new and broader perspectives to establish. Whatever limitations there might once have been on his latent talents have largely gone out the window."

Moreover, the people who work for him have forced a growth in the office manager's abilities, too, Lank continued. They are no longer "a corps of clerical workers, but a staff of specialists whose work must be integrated into a meaningful whole." As such, they present a whole series of human and professional problems which the office manager must solve if the office is to continue to function smoothly and efficiently.

"Like the office function itself, he (the office manager) has developed in two new dimensions: He has become something of a specialist in his own field, and he has acquired the skill of growing beyond his own capacity and fitting his knowledge into the operation of the company as a whole. He has had to become that paradox: the well-rounded specialist."

Perhaps the most dramatic indication of the office manager's expanded scope comes in the field of office automation, Lank suggested.

"As the person within the company who knows most about the highly technical matters involved, the office executive has had delegated to him most of the prerogatives of management in making decisions concerning automated office procedures," the DuPont president declared. "He may require formal approval from the president, but the president who has learned to trust the knowledge and judgment of the office executive will normally follow his recommendations. Perhaps he will soon have to find a new title for the office executive as

Well-attended social functions included banquet, luncheon in Montreal's Queen Elizabeth Hotel.

New president Hodges (fifth from left, first row) poses with entire NOMA board of directors.

he assumes a greater and greater share of management responsibilities.

He listed as a few of the challenges which will give office management its greatest chance for assumption of wider company responsibilities:

Automation. "It is the responsible individual's role to evaluate the scientific tools at hand. This technology must be seen not as an end, but as a means; not as a substitute for human creation, but as its handmaiden; not as a replacement for reason and judgment, but as an aid to it."

Personnel. "While it does not necessarily follow that this new class of office staff will have more native intelligence than office workers of old, they, like their superiors, will be in the midst of a general upgrading. It will be a task of major proportions to direct the initiative and drive of this new kind of office employee into the most rewarding channels."

Communications. "If a proper understanding of the office function is to be observed, the executive must enjoy the confidence of those he intends to serve, he must counter the obstruction of blind defenders of the 'status quo', he must overcome the inertia of those for whom innovation is too complicated."

"Finally and perhaps most significantly," he concluded, "a high level of performance in the office will depend on more and more exercise of management functions—decision and judgment—than office executives face today. The results will be more far-reaching and more complex; they will involve more possibility of profit or loss; they will have far deeper effects on the success or failure of the firm.

"The really new dimension for the office executive is his growth towards the exercise of true management functions. His new horizons lie far beyond the confines of the office."

The afternoon session on the opening day of the conference was devoted to a panel of three speakers, who discussed "Your Office—of the 60's." W. E. Williams, president, Procter and Gamble Co. of Canada, talked on "Organizing for Increased Responsibility," M. E. Mengel, vice president, Burroughs Corp., discussed future developments in office equipment, and Mrs. A. J. Wickens, economic advisor to the Secretary of Labor, U. S. Department of Labor, outlined "Planning Personnel Requirements."

Clerical workers in demand

Mrs. Wickens, in discussing the future clerical labor supply in the United States and Canada, declared that both countries can anticipate a growing need for clerical workers, as well as professional and managerial personnel.

"Taking the broad occupational groups in the U. S.," she declared, "we find that the most rapid rate of increase in employment requirements is expected to be in the very occupations that concern you most. The competition will be keen. In professional and technical occupations combined, an increase in excess of 40 per cent is expected. For proprietors and managers, and for clerical and sales workers combined, as well as for service workers in the more limited sense of that term, an increase of about 25 per cent is anticipated. No change in unskilled workers is expected in the 60's, and there will be roughly 17 per cent fewer farmers and farm workers at the close of this decade than at its beginning. These all represent continuation of existing trends.

"The increase in the demand for clerical workers as such is expected to be nearly 30 per cent in the next ten years. In quantitative terms, for clerical occupations, the increase in employment is expected to be over 3 million, for a total of 12⅓ million by 1970."

The manufacturing industries, now the largest single employer of clerical workers, will probably have to add about half a million office workers in the next ten years, the Labor Department official continued. An increase of 400,000 is expected in the service industries and in finance, and a rise of 800,000 in trade.

During the same decade—1960-1970—the total labor force in the United States will rise by 13½ million people, Mrs. Wickens declared. This represents almost a 20 per cent increase over today's total of 73½ million in the United States labor force. During the next ten years approximately 15½ million of the present workers will withdraw from the market, but some 26 million young men and women will enter, and some three million mature women return to it, for a total of 87 million workers by 1970.

"But see what this means," Mrs.

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New personnel needs anticipated for office

Wickens continued. "It means that in the space of one decade, employers will have to cope with 29 million new and different workers. Put another way, one-third of the entire labor force of 1970 will have come into the labor market during one ten-year period. We have never before had such a change, except perhaps in wartime."

The key questions for any personnel director are, she said, who these 29 million new workers will be, and when will they come into the labor market?

"In terms of age, they will be young workers and older workers. There will be almost no increase in the number in those crucial middle years—the years from which you expect to draw your executives, your supervisors, your experienced personnel," she warned.

Analysis of the ages of the working population of the United States during the two base years, 1960 and 1970, indicates these facts, she said:

Young workers under 25 will increase by 6.4 million from 1960 to 1970, or a total of 46 per cent.

Older workers will increase

Older workers over 45 will increase by 5.5 million, or 20 per cent.

In the age range 25-34 there will be a small increase of only 1.8 million or 12 per cent.

There will be an absolute decrease in the number of workers in the 35-44 age bracket.

This represents a very significant change from the 1950's, Mrs. Wickens pointed out, when most of the net increase in the work force was in the 35-and-over age groups, with the largest increase registered in men and women 45 and over.

"There was very little increase in the number of young people under 25 years of age, and virtually no increase in the 25-34 year age group. This explains why you weren't able to find enough of those pretty blonde secretaries, age 21, requested by top management. They weren't there. It explains, too, some of the scramble for college graduates. The ranks of those born in the 1930's are very thin. In that decade only nine million people were born in the United States. Nearly three times as many children were born in the 1940's."

The sharpest increase in the number of young people coming on the labor market is anticipated in 1961 and 1965, she reported.

Women coming into the labor force will represent almost one-half the total increase in the United States job market during the next ten years, she reported, and of these a large part will be mature women whose children are of school age.

"By 1970, it is anticipated that well over half the women in the United States between the ages of 45-55 will be in the labor force," Mrs. Wickens reported. "The percentage will be nearly as high—45 per cent—among women 35-44 years old, as well as among young American women in their early twenties."

In summary, then, she reported, the labor market in the United States will show in the 1960's:

A tremendous influx of new and inexperienced workers, who, by and large, will be better educated than they have been in the past.

A greater number of older workers.

Only a slight increase of workers in the middle years.

Many more women workers, and especially women over 35.

"What does all this mean in terms of personnel?" she asked.

"First there will be a high rate of turnover. This is characteristic of young workers and of women workers as a group, in comparison with men in their middle years. You will need to do everything you can to keep turnover down.

"Another important aspect of personnel policy is to hold on to your young men and women who are 20-30 years old now—the babies of the 1930's. Give them every chance to grow and develop. They won't be easy to replace. So don't sit and wonder, in 1964 and 1965, if you don't get many answers to an advertisement like this: 'Wanted: Ambitious, experienced young men for office, 30-35 years old. No others need apply.'

(To be concluded)

SEA FOAM BOND

The Lightweight with Quality You Can MEASURE

With Sea Foam, quality is more than a word—it's a fact. Sea Foam's No. 1 rank in lightweights has been built on the qualities you want in a second sheet . . .

WATERMARKED

No possibility of substitution.

LEGIBILITY

A second sheet that reads like a letterhead.

EASIER HANDLING

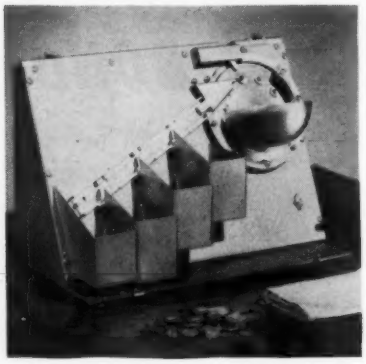
Lies perfectly flat. No crease . . . no curl.

See for yourself why Sea Foam is America's preferred second sheet. Send for your Sea Foam Bond samples today. Dept OM-760.

BROWNVILLE PAPER COMPANY
BROWNVILLE, NEW YORK

Use Readers' Inquiry Coupon on Page 88

NEW SYSTEMS AND EQUIPMENT



▲ **Coin counter** 2

With this automatic and portable coin counter and sorter, one adjusts the counting device, flips the switch, and pours in the coins. The machine then counts and sorts at the rate of 15,000 coins per hour, handling 1¢, 5¢, 10¢, and 25¢ denominations. Fifty-cent coins are left behind in the hopper. Weighing 27 pounds, the machine has an overall size of 18 inches wide, 13 inches high and nine inches deep. It operates on 110 volt AC, 60 cycle current, and with an inverter, for those who are interested, it may even be used in an automobile. Standard Change-Makers, Inc., 422 E. New York St., Indianapolis 2.

▶ **Paper punch** 1

A gauge which locks in place to provide for alignment of papers to be punched, and a removable plastic tray at the base to catch perforation cut-outs, are the main features of this two-hole punch. Designed for ¼-inch holes with 2¾ inches from center to center, the punch is available in a choice of three colors: grey, green, and tan. Acco Products, Div. of Natser Corp., Ogdensburg, New York.

▲ **Folding tables** 3

A choice of three different sizes, five different top styles, and three types of protective moldings are offered with the "Leader Line" series of folding tables. Table height can be increased by adding extension legs in lengths of one inch to 12 inches, and each model has a riveted and welded, all-steel chassis running its full length. The entire understructure is coated with Oakite Crys-Coat for protection against rust. Howe Folding Furniture, Inc., One Park Ave., New York 16.

◀ **Standard typewriter** 4

More than 100 type styles are available with this standard typewriter which is made in a wide variety of pastel colors. Among the features are: "Fold-A-Matic" construction, which permits rapid breakdown for cleaning and maintenance; a flat platform behind the platen to provide support for erasures; and an interchangeable type bar, permitting the use of special technical typefaces or company trademark symbols. Remington Rand Div. of Sperry Rand Corp., 315 Park Ave. South, New York 10.

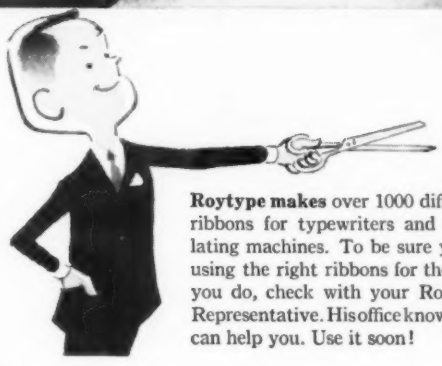
It's a snap to use Roytype's carbon sets

They're quick. They're efficient. Roytype carbon sets come in single sets or handy pads of copy paper with carbon sheets between each page. To use them, all you do is take as many pages as you want copies, put a first sheet in front of them, and you're ready to roll.

There's no fussing with carbon and flimsy, hard-to-handle paper. The saving in time and trouble is far more than the cost of Roytype carbon sets.

Roytype carbon sets are available imprinted with your letterhead, with word "copy", or with a special design. Black and red are the standard colors, but we'll be glad to make them up in others, for a slight added charge. You can have them in all sizes, including legal (these have red marginal rules) and in all weights of paper.

Call your Roytype Representative to find out all about Roytype's carbon sets.



Roytype makes over 1000 different ribbons for typewriters and tabulating machines. To be sure you're using the right ribbons for the jobs you do, check with your Roytype Representative. His office knowledge can help you. Use it soon!

MAIL COUPON WITH YOUR LETTERHEAD

MR. ROY TYPE c/o Royal McBee Corporation,
Department O, Port Chester, New York

Send a Roytype Representative who will explain your money saving coupon purchase plan.

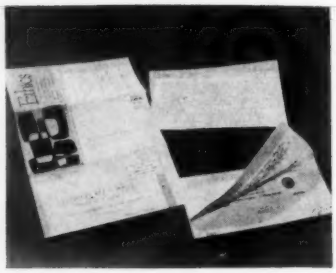
Your Name_____

Firm Name_____

Street Address_____

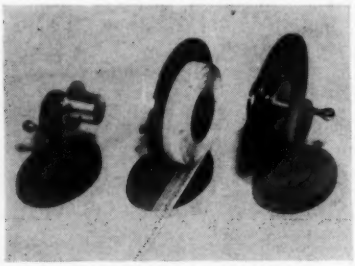
City_____ **Zone**____ **State**____

NEW SYSTEMS AND EQUIPMENT



▲ **Mailing piece** 6

The Transo Triple-Duty mailing piece is a combination letter, circular, and order form, with outside and reply envelopes. Manufacturer prints, assembles, and delivers the piece sealed, ready to be addressed by the mailer. Transo Envelope Co., 3542 N. Kimball Ave., Chicago 18.



▲ **Tape winders** 7

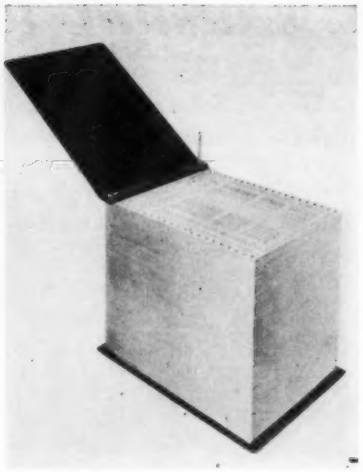
Paper tape winders and rewinders are now available with adapters for computer input and output reels. Shown is Adapter No. 8060 for RCA 501 and Burroughs 220 computers. Dresser Products, Inc., P. O. Box 2035, Providence 5, R. I.

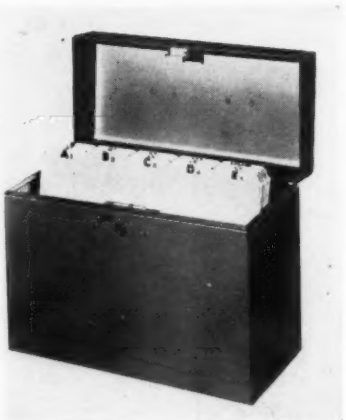
▶ **Personal file** 8

A new personal file with heavy duty piano hinges is now available. The carrying handle folds flat when not in use. The model shown measures 10¼" x 12½" x 6", weighs five and one-half pounds, and is available in two-tone color schemes. Lit-Ning Products Co., 170 N. Robertson Blvd., Beverly Hills, Calif.

▶ **Nylon post binder** 5

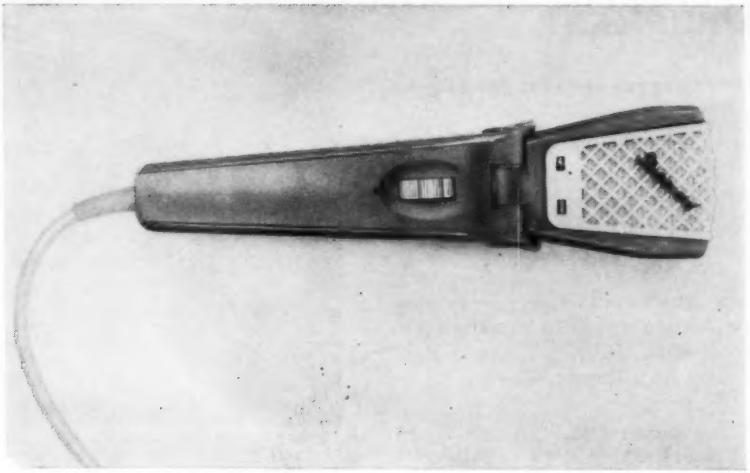
A nylon post binder which accommodates 3,000 sheets or up to 10 inches of paper. The binder features a shockproof "cycolac" locking mechanism which is flush with the surface of the top cover for easy storage. Wilson Jones Co., 209 South Jefferson, Chicago.





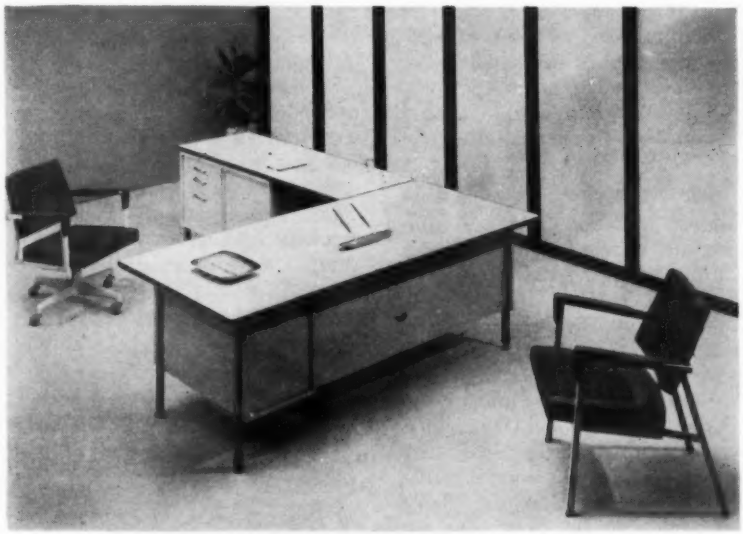
▲ **Electrical outlets** 9

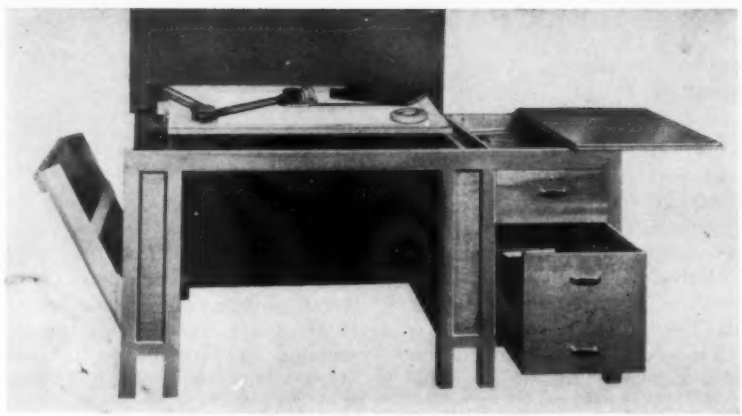
New three-wire Electrostrip, providing electrical outlets anywhere along its length, is designed to meet electrical code requirements for equipment grounding. Manufactured especially for use with office machines, it will accept both two and three prong plugs. It eliminates the necessity for long, dangerous extension cords and re-wiring jobs. BullDog Electric Products Div., I-T-E Circuit Breaker Co., Box 177, Detroit 32.



▲ Microphone **10**

A one-button control, multi-purpose microphone permits the operator to exercise full control over all dictating operations, including start, stop, dictating, correction, review, and erase. The microphone also may be converted to an ultra-sensitive pick-up for conference use. Stenocord of America, Inc., 29 Broadway, New York 6.





▲ Stacking chair **11**

A manufacturing process which bonds the seat and back by mechanical means is said to give the #1279 stacking chair unusual durability. The process, called U. S. Raval, bonds the seat pan, foam rubber cushion, and upholstery into one permanent unit in a single operation. The chair is designed for use in auditoriums, offices, and in institutional areas. Metal parts are coated with a silver satin enamel finish. Steelcase, Inc., Grand Rapids, Mich.

◀ Metal furniture **12**

Contemporary metal office furniture shown here is part of the manufacturer's 4000 line. The 75 basic units in the line are flexible enough to permit several variations when used in different combinations. The units are said to be applicable to every kind of office, "from secretary to board chairman, and everyone in between." All-Steel Equipment, Inc., Aurora, Ill.

◀ Drawing board **13**

Executives whose work involves the make-up of drawings may find that the Densmore "Drawing Chief" desk is the answer to their needs. The drawing board, which can be concealed under the desk top when not in use, is elevated to posture chair height by a raising mechanism when the desk top is opened. Storage facilities are provided in the desk for drawings, paper, reference books, catalogs, files, and tools. Densmore Calculator Co., 2003 E. 14th St., Oakland 4, Calif.

NEW SYSTEMS AND EQUIPMENT

Catalog file 14

The first edition of "VSMF—The Microfilm Catalog File" has been put into operation for the missile-aircraft industry. The system contains 25,000 pages of suppliers' catalogs, which are available for viewing or printing within 15 seconds. Technical Services Division, Rogers Publishing Co., Denver, Colo.

Key punch desk 15

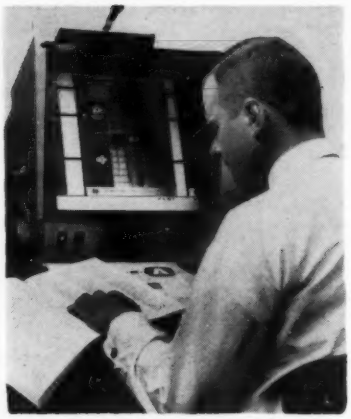
The following characteristics combine to make the Key Punch Desk an item of data processing accessory equipment built on a modular principle: three different drawer sizes can be used in multiples of the same or different series to meet individual requirements; different partitioning plans within the drawers can be provided; interstacking of drawer units in combination with units of varying sizes equipped with shelf inserts is possible; and channel inserts for control panel storage are available. Diebold, Inc., Canton 2, Ohio.

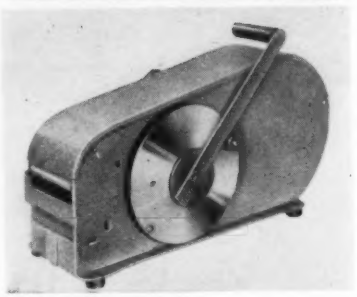
Dictating machine 17

Called "Envoy," this tape dictating and transcribing machine has a built-in indexing system for word and phrase finding, with talk-listen functions controlled at the microphone. Equipped with 90-minute magnetic tape, the machine weighs less than nine pounds, and can be tailored to meet special requirements by employing optional accessories such as a telephone recorder for capturing both sides of a 'phone conversation and a desk mike for loudspeaker playback. Voicewriter Div. of Thomas A. Edison Industries, 31 Lakeside Ave., West Orange, N. J.

Typewriter ribbon 18

A universal typewriter ribbon designed to outwear three ordinary ribbons and fit most typewriters has been developed by Mittag Division of Burroughs Corporation. Marketed under the names "Nu-Kote" and "Encore," the ribbon has been used to write 500,000 words without losing its clarity. Mittag Div., Burroughs Corp., Park Ridge, N. J.





Tape dispenser 16

Gummed tape for sealing envelopes and packages is ejected from the Hercules #99 automatic sealing machine in a single operation described by the manufacturer as "feather touch action." Tape up to three inches in width can be accommodated by the device. Seal-O-Matic Dispenser Corp., Newark 5, N. J.

Rotary card-file 19

A two drum rotary card file, called the Revo-File, can handle up to 15,000 active records with the advantages of push-button control. Mosler Safe Co., 320 Fifth Ave., New York 1.

Office Management
and AMERICAN BUSINESS

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INTERCOMMUNICATIONS EQUIPMENT

By LYMAN CODDINGTON

PEOPLE HAVE BEEN communicating with each other for many centuries. From the aboriginal groans uttered by our cave-dwelling ancestors, through smoke signals, Paul Revere's ride, and on up to modern times, man has desperately attempted to improve his message receiving and giving. Nowhere is this more obvious than in the modern American business office.

Conveyance of business intelligence in the most efficient possible way is a long sought-after goal of the American company. In its quest for the most advanced systems of intercommunication, the corporate entity, driven by the desire to "get the word around" faster than its competitor, is presently employing 11 different methods in varying forms. These are: private telephone systems, paging systems, amplified voice intercom, teleprinting, handwritten messages, pneumatic tube systems, microwave transmission, closed-circuit television, mechanical conveyors, data transmission equipment, and facsimile systems. Each of these systems will be treated here.

Telephone systems

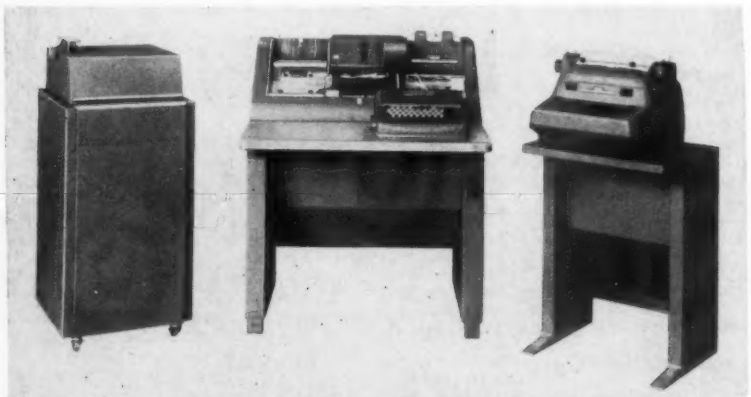
No instrument is more common in the hum of office communications than the telephone with all its ingenious variations and gimmicks. Bells, buzzers, and buttons, together with flashing lights, self-answering devices, loud-speaking attachments, "conference" hookups, private automatic exchanges, and electronic exchanges all serve to facilitate oral expression.

Imagine Titus Tempest, corporation president, safely tucked away in his oak-paneled sanctum; on his desk are two telephone instruments —one for internal office calls, and the other for discourse with the outside world. Both are equipped with several buttons which are illuminated when that particular line is active. At the moment, Titus is engaged in a spirited give-and-take with his senior vice-president on the internal system. Since he needs "hands free" to reach for some papers containing information which will back up his argument, he depresses a button activating a combination microphone and amplifier on his end of the line. He is thus able to put down the handset, reach for the papers, yet continue the debate with Mr. Senior Vice President in the meantime.

To his chagrin, however, Titus finds that the information in the documents offers no help in fending off his protagonist. He then presses more buttons on the internal system, causing hand-picked "yes men" on his management team to join in the conference, and together, they all force Mr. Senior Vice President back into his corner. Perhaps telephone intercommunications should be credited with an "assist" in this victory.

By this time, it is late in the day, and the outside 'phone of Mr. Tempest sounds off with a buzz. Suspecting that his nagging wife is calling for him to come home and discipline "Junior," Titus takes immediate action. Another depressed button bounces the call back to an automatic answering device. Mrs. Tempest hears a prerecorded message which announces the firm name, and explains that after a tone signal is heard, she may leave her name, telephone number, and a short message to be recorded for later listening.

Titus relaxes with a self-satisfied smile. Another day has been completed. Without an effective communications system it could have been quite harrowing. The fact is, however, that personnel in many companies are harassed and hampered by the lack of adequate equipment for voice communications by



The components of IBM's direct data transmission equipment include, from left to right, the telegraph signal unit, card punch console unit, and printing unit.

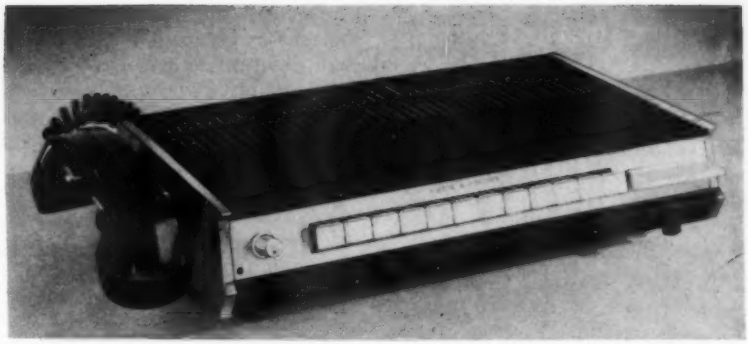
telephone. This usually happens when the company neglects its needs for effective communications during a period of rapid growth. Telephone systems become overloaded; calls are delayed; business is retarded; and tempers rise. When this occurs it is time for a thorough review of the firm's present and future needs. From this basis, the necessary equipment needed to solve the problem can be purchased.

Telephone-type communications between various points within the office are established by push buttons or dialing. Private telephone systems are completely independent and separate from the public 'phones. They call for separate instruments, permitting inside conversation while outside calls are being held.

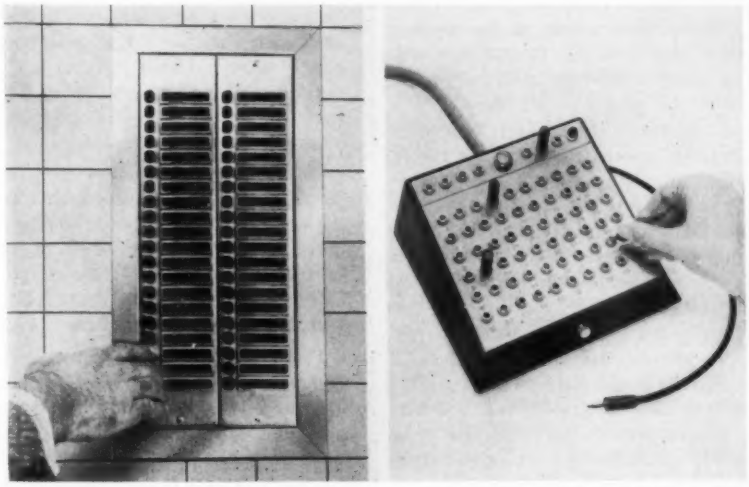
The single channel telephone system operates this way: Each instrument has a button for every other station in the system. When one wants to call another, he depresses the button for notification, and conversation begins. Anyone else desiring to place a call must wait until the original conversation is finished. Such a system is usually confined to ten units in an office where internal conferences do not take too long.

Multi-channeled systems are set up the same way, with one exception: The multiplicity of channels allows many conversations to be carried on at one time. As many conversations can be carried on as there are pairs of units in the system. Cross-talk is avoided by having balanced lines in the system (two wires for each telephone station). Devices are available to permit one to break into a private conversation and establish priority, although the absence of a signal indicates to a third party that the line to the desired person's 'phone is occupied.

Automatic dial systems again consist of the standard telephone units with dial, and no limit to the size of the system exists. It operates in exactly the same way as the regular system used by the public. If A dials B, but B is talking to C, then A gets a busy signal. But the central switchboard can have an automatic memory system so that A can hold his call until B is finished, with B's 'phone ringing automatically when he stops talking to C. Since internal calls are generally of short duration,



Essential to every intercom system is the central, or master unit, a typical example of which is pictured above. This particular model is made by Talk-A-Phone.



Auth Electric Co.'s Pagesaver works this way: operator inserts plug in the control panel (right) when a person's presence is desired. When the person registers "in" on the board (left), the plug flashes, indicating that he can now be paged.

Many banks speed messages from one department to another by pneumatic airtubes.

this feature is of great value. Priority buttons are also optional, for breaking into a conversation to conduct more important business when necessary.

Paging systems

In offices where a great many people are necessarily away from their work stations more often than not, paging systems are employed to contact these persons most expeditiously. One individual, usually the switchboard operator or the receptionist, speaks into a microphone and summons the attention of one or more desired persons, instructing them to pick up the nearest telephone, come immediately to a meeting, or "finish what you are doing, but after that, see Mr. Jones."

Paging systems are one-way only, but cover large areas. More than one page location can be provided. Latest refinements include wireless systems whereby small radio receivers can be carried about by persons who are likely to be paged.

Equipment to initiate a paging system must include a signal source (a microphone) to be placed in as many locations as necessary, amplifier equipment, and, at the other end, loudspeakers. Sidelights, such as hourly chimes, tone signals, and music, can be channeled into the system to give full use. Amplifiers are naturally designed according to the amount of power that is needed, and the number and type of signal sources which are to be used. Hundreds of types of loudspeakers are available for handling the reproduction of sound. Chosen not only for this reason, they are also selected for their aesthetic setting within the bounds of office decor.

Wandering executives who are needed to take phone calls or to see visitors can also be contacted by visual signals consisting of panel lights of various colors located at points throughout the office. Each executive can have his own color code which flashes when he is needed. Buzzers can also be utilized for this purpose, as can call bells located around the building.

In the wireless paging systems, the receiver may be placed in the pocket, with or without having a horn attached to the lapel of the coat or a piece fitted to the ear.

Amplified voice intercom

Particularly efficient in quiet areas and with people who move around in their work, voice intercom equipment has at least one master station containing the speaker/microphone, amplifier, selector keys, and other controls. Such a master is joined with one or more remote or substations, also containing a speaker/microphone and, if called for, an origination switch to initiate conversation with the one or more master stations within the entire system.

Any combination of masters and remotes can be set up to function as an efficient intercommunications system. Channels of communications can be set up in any way except between two remote stations. There must always be a master within the system. It controls the loudness of the system and is the only station that needs to be plugged into a power outlet.

Master stations have a "press to talk, release to listen" button to conduct the conversations. But when they receive calls from others of their type, no buttons or switches have to be operated; this is necessary only when they initiate the conference. Remote stations, on the other hand, reply to utterances from the master station without the pushing of any buttons or switches at any time. But devices may be incorporated in the remote stations which can activate lights or audio signals in the master, thus signifying a desire to talk.

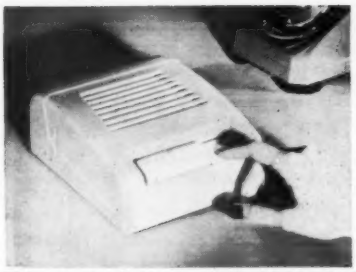
Conversational leaks, when two stations are talking, can be avoided by selecting the proper type of equipment, even though measures against "snooping" become more difficult to put into effect when the system is complicated. To prevent such leakage, the system must be properly engineered and installed with a care to elimination of this problem.

So-called executive intercom sets have the following features: addition of a new party to a call whenever necessary, so that everyone is able to hear and talk to everyone else; a silent lamp signal which indicates that another wishes to confer; allowances for priority to break in on conversation; a number of channels to fit your office needs; and a lighted lamp which signifies that someone has called while you were absent, and wishes to be called back upon your return.

The "Lokator," produced by Edwards Co., is used to page individuals in the office when they are wanted at a certain location or to answer the telephone.

Teleprinting systems

Teleprinting, or teletypwriting, has an added advantage over voice communications since it provides a permanent record of the discussion



This remote intercom station is part of Stromberg-Carlson's Key-municator system. Operator presses button to speak.

that transpires between two points. A company which employs this method of communications can do so in either of two ways: It can subscribe to common carrier service on a time-and-rental basis as the service is needed, or it can rent its own direct lines for private continuous usage.

There are thousands of private wire systems in operation throughout the country, many of them belonging to small users. A "private wire" is simply a telegraph wire or circuit, leased by the common carrier for exclusive use. Usually, private wire systems terminate in machines called teleprinters. The message is typed on this machine which flashes it over the wire. A similar teleprinter picks up the message at the other end, and types it out as printed copy, ready for use.

The development of completely automatic switching systems has added a further refinement to teleprinting. Such systems are used in private, fully automatic networks which transmit business messages between the headquarters and branch stations on the circuit, as well as between individual branch offices themselves.

Direct inter-office communication, conference calls, and "add on" of extensions can be arranged with the Call Director.

The "Teleswitcher B," developed by the Data Processing Systems Division of Smith-Corona Marchant, Inc., is a system that is adaptable to the needs of commercial users of printed communications equipment. It consists of a master control unit, one typing reperforator with tape transmitter attached, and two receive-only page printers. Equipment in the field stations consists of one receive-only page printer and one typing reperforator with a tape transmitter mounted on a table.

The reperforator in the master control station is connected to the keyboard and the receiving selector in a local loop. The tape transmitter is connected internally with its own receive-only page printer, and externally with all the page printers in the stations on the network. The second receive-only page printer of the master control unit is used as a monitor. It can be either on or off, depending upon whether monitored copy is required by the headquarters office.

Every transmitter in the network is assigned a special two-character starting code, and every receive-only page printer is assigned a receive directing code. The teleswitcher's line scanner automatically transmits all starting codes, thus questioning each station, on a round robin basis according to a pre-determined schedule, as to whether it has any data or messages to transmit. If the station called has no message, it sends back the character "V." Upon receipt of this signal, the teleswitcher's scanner automatically queries the next station, and so on until all have had a chance to transmit. Then it resumes the process, starting with the first station on the program.

If the called station does have a message to transmit, it automatically starts transmission immediately upon receipt of the starting code assigned to it. The teleswitcher automatically routes the message to the proper station or stations. Upon completion of the message, the transmitter in the sending station stops immediately, and the teleswitcher's scanner then calls in the next station.

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Hand-written messages

TelAutograph's telescriber system permits maintenance of instantaneous handwritten communication with what is known as "electronic longhand." Transceivers—units with which dispatchers can write messages and transmit them instantly to any of the locations in the system—are the heart of this communications arrangement.

To use a transceiver, the dispatcher writes on a metal platen with a pencil-like stylus. A pilot-receiver pen in his unit writes one copy of the message on a form which appears in the machine's viewer. Simultaneously, the message appears in the dispatcher's handwriting on whichever of the receivers he has activated at a distant point in the system with a selector panel.

The workings are based upon conversion of the motion of the dispatcher's stylus in electrical signals, which vary in intensity. The signals are carried by wire to the receiving machine, where movable coils transform them back into mechanical motion. The receiver has a linkage system exactly like that in the transceiver, so that the receiving unit's pen moves and writes with indelible ink under the guidance of the sender's stylus.

It is possible to transmit written messages or sketches over telephone or radio circuits with certain other pieces of equipment presently on the market. Again, the user of such equipment writes or draws with a pen on paper as on any note pad. As the pen moves, the remote receiver, or receivers, instantaneously and faithfully reproduces the copy as it is written.

Over telephone wires, a normal voice contact can be made through the telephone handset used in conjunction with a written message transmitter. If there is no answer to the query, the caller, by means of the transmitter, can switch to writing his message. When the written message is completed, the handset is replaced in the telephone cradle and the called station is automatically disconnected. Signals emitted from the transmitter can also be recorded on magnetic tape at the receiving point for storage and subsequent playback at a later date.

Closed circuit television, limited to industrial and specialized uses until recently, is now coming into its own as a method of office intercommunications.

Pneumatic tube systems

Pneumatic airtubes are used in business wherever speed is required in transporting paperwork or light articles, or wherever there is a regular flow of routine business forms and messages to be transferred between offices, departments, or buildings.

Formerly, most airtube systems made use of a central exchange where messages were sent to be relayed to their proper destination. No carriers were directed from station to station. Each terminal had its own sending and receiving tube which connected with the exchange, and carriers were necessarily dispatched to the central point through the sending tube where they were manually redirected to the eventual destination.

The latest in pneumatic tube systems is the automatic, or self-directed, carrier variety. An operator places the carrier in the dispatch chamber of any station in the system, and then designates its eventual destination by means of common telephone dial or push button panel. From this point, the destination and progress of the carrier is controlled electrically through the action of dial-pulsed, relay-activated circuits along the common tube line emitted by a remotely located master control panel. The master control panel moves the carrier from the sending station when the route is cleared, either partially or fully, to the dialed destination in its proper turn.

Other systems work by means of magnets. The carriers are equipped with fixed and movable magnets which, when set in certain combinations, control their destinations. As the carrier passes through a wound coil in its approach to a "Y" in the tube, the magnets generate a voltage pulse that is electronically amplified to activate switches at the tube junction. The pulses "instruct" one of the deflecting switches to remain open and the other to remain closed. Thus, the relative position of the fixed and manually

indexed movable magnets determines the carrier route to the end of its journey.

Still another system operates on a different method of carrier control. A setting of rotating contact rings in tandem with fixed rings on the outer diameter of the carrier sends it off in the right direction. Adjusting these rings to a destination-coded arrangement provides a definite electrical connection between each selection ring and one of the fixed contact rings, thus establishing a circuit. This arrangement, using one, two, or three rotating rings, depending upon the installation, permits several circuits, each of which is coded to a destination, to be completed at any one time.

To dispatch a carrier, the operator sets the rotating-position rings of the carrier to conform with the proper destination, and places the carrier in the dispatch tube of the station. As the carrier speeds through the system, the electrical circuit created by the setting is "read" at every junction by an electrical brush contact unit integrated into the system at that point. The carrier, through the brush contact unit, activates the deflection switches at these junctions, which will send it the proper way. When the carrier reaches the brush contact of its destination terminal, an electrical circuit is completed through the brushes and the connection already established by the position of the carrier rings. Completion of the circuit moves the proper deflection switch at the junction, and the carrier is then ejected from the system.

Pneumatic airtubing is generally constructed of cold-rolled lacquered steel. Carriers themselves can be made of clear plastics, laminates, aluminum, or other material, with the front end padded with felt to soften its impact upon ejection.

Microwave transmission

Now that the Federal Communications Commission has ruled that there are enough radio frequencies to allow their private use in addition to the channels assigned to the common carriers such as Western Union, the Bell System, public utilities, and government agencies, microwave transmission promises to be an expanding method of moving business information from one office to another across the country. As yet, microwave frequencies have not been assigned to private users except in a few cases. Further action must still be taken by the FCC before this becomes the rule rather than the exception. However, it appears that cooperative arrangements permitting groups of government regulated businesses to purchase their own microwave facilities will provide the necessary breakthrough.

Volume of communications is the important factor in the purchase or lease of microwave equipment. Generally, after the volume passes a certain mark, according to the nature of the company's operation, it becomes cheaper to utilize a privately owned system rather than the service provided by common carriers.

Microwave systems provide fixed-point to fixed-point radio communications. Very high frequencies, on the order of 6,000 megacycles, are used. The fact that one microwave radio signal can be multiplexed—

Bell Telephone's Automatic Call Distributor system receives calls of inquiry, lines them up in the order received, and feeds them to the answering staff. If all attendants are busy, the system stores the calls, announces to customers that they will be handled promptly, and releases them as the lines are free.

One way to have "hands free" for juggling materials while talking on the telephone is to employ the "magna-phone" amplifier produced by Kay-Townes Mfg. Co.

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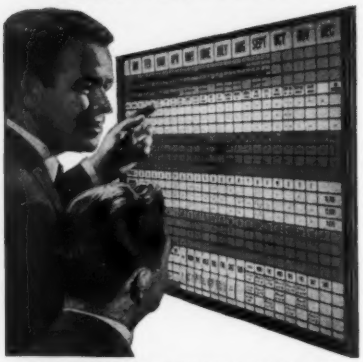

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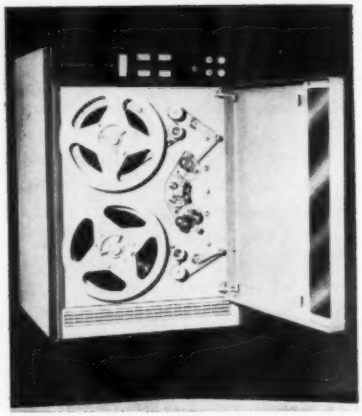
modulated with many channels of information—makes it very valuable to a firm needing extensive communications. Certain systems can carry as many as 240 voice conversations simultaneously. Because of the high frequency of microwave signals, communications range is restricted to line of sight distances—about 25 to 30 miles on flat ground. When a longer distance exists between two terminal stations, one or more repeater stations are necessary. Such repeater stations merely receive the signals, and retransmit them automatically to the next station en route. Expanding the capacity of the system or its circuit-carrying ability requires only the addition of several more multiplex transmitters and receivers at the terminals involved. The basic radio frequency transmitter and receiver, i.e. the equipment providing the carrier signal, remains the same.

In the strict sense of the word, microwave is not a communications system in itself. It is best considered as a vehicle for transmitting information via telephone, teletype, or closed-circuit TV. It takes the place of wires that would ordinarily be used in connection with these systems, and is helpful where companies spread over large areas find it necessary to get personnel together frequently, even though they are unable to leave the office.

Several thousand private microwave stations have been installed during the past ten years by the right-of-way companies. Hundreds more are in use by the telephone companies.

Each possible microwave application must be considered individually in order to make any decision as to its economic feasibility. When there is a need for a sizable number of voice, teletypwriter, facsimile, or other circuits between a company's various facilities, it will be less expensive in many cases for the company to establish and maintain its own microwave system than to lease common carrier facilities.

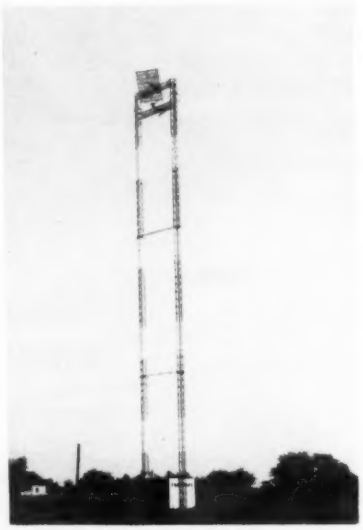
Costs of the microwave system stem from these sources: the cost of the microwave equipment itself, which can be leased or purchased outright; the cost of radio maintenance, which, again, can be budgeted for on a contract basis; the cost of power; and the cost of site purchase or rental.



Data can be transmitted over telephone circuits at 1000 words per minute with Avco's transistorized "Comex 104" unit.

Closed-circuit television

Originally used to obtain a picture of what was happening in a remote manufacturing or shipping area, closed-circuit television is just beginning to exploit its full potential as a medium for conducting nationwide sales programs, medical operations, teaching operations, and police protection. Now it is also finding widespread office use. Banks are utilizing it for signature comparisons. A teller can easily check

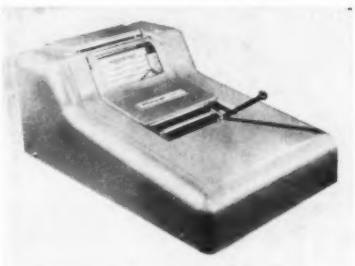


Microwave repeater stations direct the radio beam to the ground shack via one deflector, where it is retransmitted and sent upon its way via the other deflector.

on a person's signature by having a central file clerk look up the client's account and flash it before a camera whose receiver picks it up at the teller's window.

Perhaps the widest use of closed-circuit television is in the fulfillment of its role in the concept of automated brokerage service. Strategically located TV receivers can send pictures of stock ticker tapes to customers as well as employees of the brokerage firms, enabling them to see "how the market is going." Instead of one person at a time be-

Shirt-pocket radios carried by key personnel allow them to be reached at all times for important decision-making.



The basis of Telautograph's "electronic longhand" system is this transceiver with its special pen for writing messages.

ing able to observe a ticker tape machine, many persons can see the latest quotations on the screen at the same time, thereby being able to place their subsequent buy and sell orders more quickly.

Mechanical conveyors

Transportation of messages from floor to floor in the multi-storied office building, and from one place to another on each floor, can be accomplished by means of the conveyor. On vertical systems, paper is sent or received through a small wall opening on each floor. Also present on each floor is a dial control which is set for the desired floor when a piece is inserted. An automatic electric relay then goes into action as the piece travels on an endless chain within the walls of the building; it activates tabs on the bottom of the carrier box and the necessary corresponding tabs on the preselected floor, causing the piece to be cast out when it arrives at its destination.

Requisites for a conveyor system are: an established pattern to the message flow involving a regular, steady volume without alternating splurges and complete cessation; some uniformity in the size and shape of the material to be conveyed; and, of course, sufficient man-hour savings to make the system a profitable one, or at least one that pays for itself. Versatility should be mentioned: You can send material any distance; you can send it up, you can send it down; you can send it around. You can make it land on desks, drop from the ceiling, or spout from the wall. Uses for these systems are limited only by imagination.

The principal disadvantages are cost of installation and possible relocation costs. The ideal time to install mechanical conveyor equipment is when a building is being constructed or remodeled, or when central air conditioning is being installed. It should not be attempted, however, without an adequate survey of all paperwork and communications operations, and the possible needs for realignment of these operations in the future.

Horizontal conveyors are suitable for any application in which a large volume of messages are handled. They may be used for sorting and distributing, or for assembly at one point of work originating at a number of other points. They regulate the flow of work and reduce the movement of office personnel from desk to desk with its attendant confusion and loss of time.

Such conveyors can be of a single or multiple lane type. The former is generally used to convey messages from a number of desks to a single collection point. Multiple length conveyors with belts of varying distances provide for automatic depositry of papers onto individual desks or at other locations down the length of the system. Multiple

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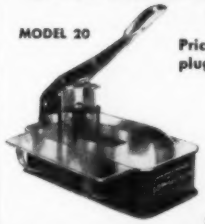

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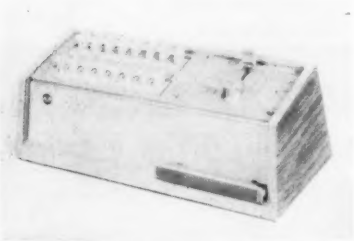
length belts can also be provided with stops to cause messages to halt at various locations for clerical operations. The belts beyond the stops can be used to redispatch the messages to the next station.

Data transmission

Data transmission equipment makes possible the speedy, accurate duplication of information and its economic transfer to other locations, whether they be separated by few or many miles. In short, it involves a process by which business machines "talk" with each other as easily as humans. Data contained on punched cards, paper, or magnetic tape are read and transferred over leased wire circuits to a transceiver where the data are simultaneously punched into other cards.



"Instant Call" intercom by RCA has conference call and paging facilities.

The machines at either end of the circuit are identical and can be used interchangeably for transmitting or receiving.

Bell Telephone System's Data-Phone, for instance, enables automatic transmission of any type of data in any machine language to take place over private or regular telephone lines at low or high speeds, from and to any points where there are standard telephones. It is especially useful in handling accounting and billing information, invoices, inventories, sales orders, payrolls, and other forms of business data.

The Space-Maker, manufactured by the Automatic Elec. Co., is a telephone which has a moveable dial and hookswitch.

In this system, Data-Phone units are placed between the business machine and the telephone at both sending and receiving locations. A telephone call is made manually to the receiving station. Then, at the flip of the switch, data are transmitted from one machine to another automatically.

Carrrying up to 1,400 words per minute, the system handles information from any medium, such as cards, paper, or magnetic tape. Data are received in the form of electrical "bits" from the originating business machine. Data-Phone units convert the bits into tones for transmission over regular telephone lines. At the receiving end, identical units convert these tones back to the original electrical bits where the information is received and recorded by standard business machines, teletypewriters, or other recording equipment.

Cost of the system includes an initial installation charge and a monthly rental for the equipment. Also, there is a usage charge—the same as that charged for regular long distance calls. For this reason, the system is better employed during the after-hour period to take advantage of reduced rates.

Facsimile systems

Briefly, facsimile is a system for transmitting pictures or other graphic matter by wire or radio. The surface of the material to be sent is traversed by a light beam and photoelectric cell arrangement which translates the light and dark areas of the material thus scanned into tones of corresponding intensity capable of being transmitted. Reproduction of the transmitted material is done by a stylus which touches a chemically treated paper in response to the received tones. The action of the stylus "burns" the original image into the special paper, thus creating a duplicate ready for use.

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mitted and reproduced at a distant point in exact "facsimile" with this type of system, providing swift communication between various floors or departments of a company, from one building to another, or between headquarters and branch offices.

The manufacturers

Following is a list of the principal manufacturers of intercommunications equipment:

Airmatic Systems Corp., 441 Market St., Saddle Brook, Rochelle Park, N. J.
Allied Radio Corp., 100 N. Western Ave., Chicago 80.
American Development Electronics Co., 77 Poinier St., Newark 3, N. J.
American Telephone & Telegraph Co. (Bell Telephone), 195 Broadway, New York 7.
Auth Electric Co., Inc., 34-20 45th St., Long Island City 1, N. Y.
The Autocall Co., 160 Tucker Ave., Shelby, Ohio.
Automatic Electric Co., Northlake, Ill.
Bliss Electronic Corp., P.O. Box 366, Sussex, N. J.
Bogen-Presto Co., P.O. Box 500, Paramus, N. J.
Cambridge Co., 224 N. Desplaines St., Chicago 14.
Comptometer Corp., 5600 Jarvis, Chicago 48.
Collins Radio Co., 2700 W. Olive Ave., Burbank, Calif.
Continental Mfg., Inc., 1612 California St., Omaha 2, Neb.
S. H. Couch Co., Inc., 3 Arlington St., N. Quincy 71, Mass.
Dictograph Products, Inc., 95-25 149th St., Jamaica 35, N. Y.
DuKane Corp., 103 N. Eleventh Ave., St. Charles, Ill.
Edwards Co., Inc., 90 Connecticut Ave., Norwalk, Conn.
Electro-Vox Intercom Corp., 9 E. 54th St., New York 22.
Executone, Inc., 415 Lexington Ave., New York 17.
Federal Telephone & Radio Co., 100 Kingsland Rd., Clifton, N. J.
Fannon Electric Co., Inc., 98 Berriman St., Brooklyn 8, N. Y.
Feiler Engineering & Mfg. Co., 8026 N. Monticello Ave., Skokie, Ill.
General Electric Co., Communication Products Dept., Lynchburg, Va.
The Grover Co., 25525 W. Eight Mile Rd., Detroit, 40.
International Business Machines Corp., 590 Madison Ave., New York 22.
Kay-Townes Mfg. Co., 1511 Dean Ave., Rome, Ga.
Kellogg Switchboard & Supply Co., 6650 S. Cicero Ave., Chicago 38.
Kleinschmidt, Inc., County Line Rd., Deerfield, Ill.
Lamson Corp., 10 Lamson St., Syracuse 1, N. Y.
J. M. Loge, Sound Engineers, 2171 W. Washington Blvd., Los Angeles 18.
Mercury Industries, Inc., 356 Broadway, Hillsdale, N. J.
Mohawk Business Machines Corp., 944 Halsey St., Brooklyn 33, N. Y.
Motorola Communications & Electronics, Inc., 4501 W. Augusta Blvd., Chicago 51.
North Electric Co., 553 S. Market St., Galion, Ohio.
Philco Corp., Tioga & C. Sts., Philadelphia 34.
Radio Corp. of America, Front & Cooper Sts., Camden 2, N. J.
Rauland-Borg Corp., 3535 W. Addison St., Chicago 18.
Remington Rand Div. Sperry Rand Corp., 315 Park Ave. South, New York 10.
Mark Simpson Mfg. Co., 32-28 49th St., Long Island City 3, N. Y.
Wm. M. Smith Co., 20 Ferguson Ave., Broomall, Pa.
Stromberg-Carlson Co., Div. of General Dynamics Corp., Special Products Div., 1400 N. Goodman St., Rochester, N. Y.
Talk-A-Phone Co., 5013 N. Kedzie Ave., Chicago 25.
Tandberg of America, Inc., 8 Third Ave., Pelham, N. Y.
TelAutograph Corp., 8700 Bellanca Ave., Los Angeles 45.
Telecom, Inc., 1019 Admiral Blvd., Kansas City 6, Mo.
Tele-Norm Corp., 55 W. 42nd St., New York 36.
Times Facsimile Corp., 540 W. 58th St., New York 19.
Transelectric Mfg. Co., 53 Hopewell Rd., Oxford, Pa.
Vocaline Co. of America, Inc., 100 Bristol Bldg., Old Saybrook, Conn.
Webster Electric Co., 1900 Clark St., Racine, Wis.
The Western Union Telegraph Co., 60 Hudson St., New York 13.
The Wheeler Electric Co., 150 E. Aurora St., Waterbury 20, Conn.
Wheelock Signals, Inc., 273 Branchport Ave., Long Branch, N. J.

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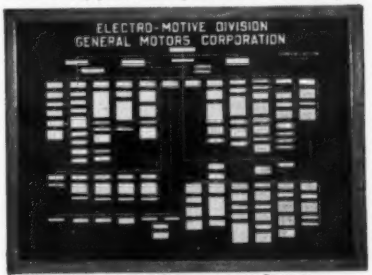

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Be Just as Proud of Your Erasing as You Are of Your Typing!

EVEN on today's superb machines — electrics or standards — typists make occasional mistakes. But you can be just as proud of your erasing as you are of your typing. Erasing results are almost unbelievably clean and quick with these *specially selected Weldon Roberts Erasers for correcting impressions made through carbon or fabric ribbons.*

JUST TWO EASY ERASING STEPS:

1. NO. 448 GREEN GLOW
Removes surface carbon to prevent smearing. Soft green rubber encased in spiral paper wrapping with pull-string for easy repointing.

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Removes the final image. Wood-cased eraser with quality gray rubber core. Easily repointed in any pencil sharpener or with a knife. Hexagonal; won't roll off your desk. With whisk for brushing away eraser crumbs. (NO. 365 GRAYPOINT, same eraser without whisk.)

OR NO. 378 GRAYPOINT
With same quality gray rubber core. Spiral paper wrapped, like NO. 448 Green Glow. The Graypoint Erasers are also superb for erasing impressions typed through fabric ribbons.

ORDER THESE ERASERS TODAY FROM YOUR STATIONER!

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365 Sixth Avenue
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World's Foremost Eraser Specialists

Weldon Roberts Eraser Green Glow No.448
MADE IN USA
Weldon Roberts Eraser Graypoint No.378
MADE IN USA
Weldon Roberts Graypoint Eraser 3650 WHISK MADE IN U.S.A.

Weldon Roberts Erasers
Correct Mistakes in Any Language

Use Readers' Inquiry Coupon on Page 88

YOURS FOR THE ASKING

CATALOGS

Postage meter **C1**

Pitney-Bowes, Inc., Stamford, Conn. New booklet entitled "How to Talk Yourself Out of a Good Thing" lists every major reason for not acquiring a postage meter mailing machine—and then rebuts each one.

Electric mimeograph **C2**

A. B. Dick Co., 5700 W. Touhy Ave., Chicago 48. Four-page folder describes A. B. Dick's new Model 434 electric mimeograph machine. In addition to data about the machine, the folder contains operating features and advantages, and describes available papers, inks, and stencil sheets.

Paper shredders **C3**

Industrial Shredder & Cutter Co., Salem, Ohio. A new, fully illustrated catalog depicts the firm's line of paper shredders designed for a variety of jobs including the mutation of light office material.

Modular steel furniture **C4**

Bentson Mfg. Co., Aurora, Ill. Modular steel furniture with ability to be assembled or dis-assembled on the spot to meet changing office needs is featured in a new eight-page brochure. Bentson also is issuing its revised 72-page general catalog to office equipment dealers.

Office leasing **C5**

Huberth & Huberth, Inc., 54 E. 57th St., New York 22. A booklet entitled "The Planned Approach to Office Leasing," is available from this 55-year-old real estate firm.

Steel shelving **C6**

Southern Metal Products, 5851 S. Broadway, Los Angeles 3. Catalog describes line of low-cost steel shelving for vertical filing and storage problems. Manufactured for loads of less than 400 pounds per shelf, the shelving is available in models of 12-inch, 18-inch, and 24-inch widths.

Rebuilt office machines **C7**

Addressing Machine & Equipment Co., Inc., 326 Broadway, New York 7. Three-color, 24-page brochure lists line of rebuilt addressing, filing, duplicating, calculating, mailing, and other office machinery. The publication also contains a description of the rebuilding process.

CLASSIFIED ADVERTISING

Rates: Minimum 20 words $7.00. Each additional word 35c. Payable in advance. Address replies to all Box Number ads c/o OFFICE MANAGEMENT and AMERICAN BUSINESS, 212 5th Ave., New York 10, N. Y.

For Sale or to Buy

FOR SALE: TWO MODEL 392 Diebold Motor driven Card files. 117,000 Card Capacity. Complete with trays. Will accept best offer. Eagle Pencil Company, Danbury, Connecticut.

FOR SALE: COMPLETE ADDRESSOGRAPH System; 1 Wheel Type Graphotype; 2 Addressographs, Model 2700; 1 Dupligraph, Model 5300E; 8 Cabinets, 133 trays; 12 Cabinets, 30 trays; 1 Saxmayer Tyer; New—45 M.E. Frames, 32 M.E. Plates; 45 M. Frame Cards; Used—130 M.E. Frames. Accept best offer, F.O.B. Trinity Missions, Box 30, Silver Springs, Md.

FOR SALE: FRIDEN FLEXOWRITER edge card programatic model FPC-8. Used one year. Single case type, parity check, operates with eight channel tape or edge punched cards. $3,250.00 original cost including accessories. Best offer. G.M. Price, Western Tool & Stamping Co., 2725 Second Avenue, Des Moines, Iowa.

SALE: N. C. R. ANALYSIS AND distributor machine Model 23015 (152) 168RT 4 years old. General Telephone and Electronics Laboratories, Bayside 60, New York. Attention: J. C. Stepina.

Positions Available

SYSTEMS ANALYSTS. UNUSUAL OPPORTUNITY for alert, intelligent systems analysts. Position involves design, development and installation of basic industrial systems. B. S. in industrial engineering, business administration or related fields necessary. Should have 3-5 years experience in systems with brackground in IDP and EDP. Location: Richmond, Virginia. Please send resume stating age, education, experience and salary requirements to: General Manager, Reynolds Metals, Company, Richmond, Virginia.

WANTED. SALES-MINDED COLLEGE MAN in late twenties or thirties to manage and direct sales of new service bureau operation in bank of large midwestern city. Office systems and procedures, service bureau or IBM sales experience necessary. Payroll, receivables, payables, billing and statistical tab services on IBM tab and NCR equipment planned. Anticipate serving principally small and medium-sized business. Reply OM 342.

YOURS FOR THE ASKING

BOOKLETS

Office accidents C8

Despite American industry's constant campaign to improve industrial safety, office accidents are often overlooked. An informative booklet entitled "Accidents in the Office" can help businessmen redress this neglect. National Safety Council, Chicago 11.

Leasing program C9

Much has been written lately about leasing as a method of acquiring equipment without tying up capital. A new brochure—"Leasing Releases Working Capital" – is a valuable addition. It describes a "pay as you grow" plan for business. Acme Associates, Inc., Suite 321, Palmolive Bldg., Chicago 11.

"Be your own economist" C10

Prof. Harold I. Lunde disputes the inevitability of inflation in a growing economy with his well documented booklet, "Underwriting Prosperity." The publication is the latest in the series, "How to Be Your Own Economist," available from Macalester College, St. Paul, Minn.

Executive reading C11

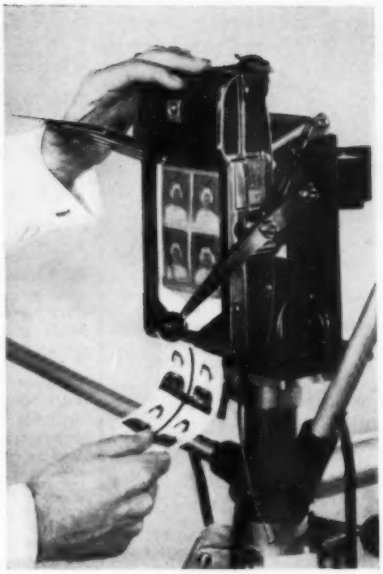
The first issue of "Voyager," North American Van Lines' new external publication, is now available. The quarterly magazine is intended for executive reading and contains, in its initial issue, articles about the Erie Canal, bridge expert Charles Goren, philosopher Baruch Spinoza, basketball, and an old-time country store. North American Van Lines, Inc., Fort Wayne, Ind.

Controlling paperwork C12

Alfred H. Dorstewitz directs business to a path out of the "jungle of paperwork" in his article, "Controlling the Paper Monster." Reprinted from *Central Manufacturing District* magazine, the article is available from Stivers Office Service, 7 S. Dearborn St., Chicago 3.

Dictating tips C13

"How to be a Dictator," 24-page illustrated booklet, succinctly and humorously tells how to improve dictation methods. Single copies are free from Stenocord of America, Inc., 29 Broadway, New York 6.



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INDUSTRIAL PRODUCTS DIVISION
FAIRCHILD
CAMERA AND INSTRUMENT CORPORATION

Use Readers' Inquiry Coupon on Page 88

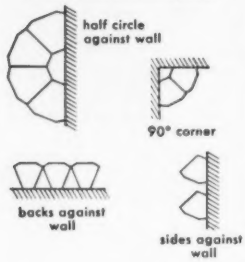
BURGESS-MANNING PHONE BOOTH *puts you in a* **"VACUUM QUIET"**

No matter how noisy the location—Burgess-Manning "Hear-Here" Acousti-Booths permit phone conversations with the privacy and quiet of the home.

Burgess-Manning "Hear-Here" Acousti-Booths offer these distinctive advantages: • no noise in • no conversation out • "vacuum quiet" • doorless • no odors • no glass to break • no hinges to stick • no dirt-collecting corners.

A completely new "theft-proof" mounting bracket makes the phone an integral part of the "Hear-Here" Acousti-Booth. Also available are side or back brackets for easy, quick mounting of booth.

Unique Design of Acousti-Booth makes possible multiple installation in less space.



Today . . . write for Bulletin No. A-142-4N for complete details of Model 45 "Hear-Here" Acousti-Booth — Also other models available.

3 Hearing Centers Associated

BURGESS-MANNING COMPANY
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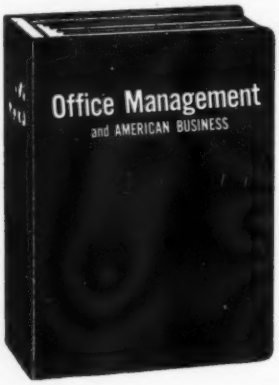

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7			C 7	

Name .....

Title .....

Company .....

Address .....

City ..... Zone ..... State .....

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OFFICE MANAGEMENT
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212 Fifth Ave., N. Y. 10, N. Y.

July 1960 issue

This inquiry form good

Until August 15, 1960

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Editorial

THE ROAD AHEAD

DURING the past month, the American Management Association reported to its members that it was renaming its Office Management Division the Administrative Services Division.

The reasons given were brief and pertinent: the office management function has grown in scope, in responsibility, and in size to the point where the words "office management" are not strictly applicable any longer. The man or woman who holds the responsibility is not simply running an office; he is, rather, managing a wide complex of activities vital to every department and function of the company.

This is a viewpoint which this magazine has long held and often expressed. We are glad to see confirmation from so many sources. For the American Management Association action was echoed in a speech made at the recent National Office Management Association conference in Montreal. There, the keynote speaker, Herbert H. Lank, president of DuPont of Canada, Ltd., said:

"His [the office manager's] contribution in the area of broad management is already a significant one. I know that in such companies as my own, the office specialists—and that includes a wide range of individuals with varied skills—are of major importance. They contribute to many of management's weightiest decisions. They help analyze markets, present and future, they speed up and streamline customer service, they help investigate the economics of possible new plants and products, they analyze the efficiency of operations, they provide an objective evaluation of people, they give us data and methods for controlling costs, and from time to time, they prod the corporate social conscience. Few of these endeavors would have been within the realm of the office 40 years ago, but today they are characteristics."

These words are true today—but they represent only the beginning of the new fields and dimensions into which those who administer the office are moving. As Mr. Lank said:

"In future, the office executive will have to continue to develop along the widening dimensions of his job. There will be increasingly important responsibilities for which he must prepare himself, to which he must measure up, but which in turn will provide the opportunity for the greatest utilization of his inherent capacities."

New responsibilities, yes—but the opportunity for the greatest utilization of inherent capacities as well. Isn't that, after all, the greatest benefit anyone can derive from his work? The work will be harder, perhaps, in the future; the problems more difficult, but the rewards and the satisfaction will constantly grow.

The road ahead looks bright.